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ABSTRACT

The curriculum guide is designed to provide students with realistic training in graphic communications theory and practice within the secondary educational framework and to prepare them for entry into an occupation or continuing postsecondary education. The program modules outlined in the guide have been grouped into four areas: printing, photography, design and detailing, and office reproduction. A schematic laboratory layout shows key relationships of various activity zones in the lab and, to aid in the separation of these into discrete units, a functional zone schematic has also been included. Each unit plan includes a description of the topic, time required, behavioral objectives, module outline, curriculum materials list, laboratory activities, and materials needed. The following topics are presented: artwork; image assembly; photo-conversion; image carrier preparation; image transfer (offset); lithographic platemaking; color separation; finishing procedures; line, halftone, and still photography; cinematography; beginning, intermediate, and advanced drafting; fluid duplicating; duplicator operation; master imaging; office artwork preparation; stencil typing and imaging; mimeograph operation 1 and 2; decision making; and image transfer (letterpress). Appendixes include: activity groups and rotation schedule, student contracts, and laboratory supply lists. (MW)

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Career Education Guide

GRAPHIC COMMUNICATIONS

CE 004663

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1 May 1974

EDUCATION

Career Education - Graphic Communications

This Career Education guide is an official publication of the Directorate, United States Dependents Schools, European Area. It is designed to serve as a curriculum guide for the graphic communications cluster. The principal will establish adequate accountability procedures for all copies issued.

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FOREWORD

The career area of Graphic Communications touches almost every facet of modern life. Beyond the obvious activities of the printing, journalism, and photography fields, every school and every business and governmental office is deeply engaged in the communication processes.

Job possibilities are greatly enhanced for any young person who is familiar with modern methods of message preparation and/or duplication.

It is not recommended that every school undertake the full graphics program outlined in this program guide. Even an occupational skills center such as Darmstadt may offer only a partial program, with such low demand modules as letter press and typesetting eliminated, or offered only for general orientation.

Most schools, however, should offer an office reproduction program which will yield both an orientation to the field and useful skills for business and other personnel. Students in journalism might be scheduled into such programs, and photography might be related. Further, drafting as a communication skill can be integrated into the graphic communication area as suggested on the accompanying chart. For students with high level skill needs, it is recommended that after introductory work in communication and graphics at the home school they be transferred to a skills center or another school where an expanded program flourishes.

The program modules outlined in this guide have been grouped into four areas--printing, photography, design and detailing, and office reproduction--to facilitate instituting partial offerings.

Because special facilities are required, a schematic laboratory layout has been developed showing key relationships of various activity zones in the lab. To aid in the separation of these into discrete units, a functional zone schematic has also been attached.

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PURPOSE OF THE GUIDE

This Career Opportunity Guide is prepared to assist in implementing a suggested learning system designed to provide the student with entry-level skills to numerous jobs in the broad field of Graphic Communications. The system also provides a substantial base for the student who decides to extend his career potential by continuing professional study at a community college, a four-year college, or technical school.

This guide should also suggest to instructors of differing disciplines possible applications of the modules described to satisfy needs of students in their own areas. Cooperation among instructors and administrators and individual imagination are the only limiting factors.

The guide describes each of the elements in the system which will assist instructors and administrators in implementing the career program. It is not a study guide but includes enough information for the prospective instructor to plan his course with his own special requirements and preferences in mind.

In addition to the program outline, there are lists of references, equipment, and materials as well as distributor sources.

DESCRIPTION OF LEARNING SYSTEM

The Graphic Communications Career Cluster is a two-year program which considers the needs, capabilities, background, and interests of each student enrolled. Instruction must, therefore, be individualized to the greatest extent possible considering the time and resources available. The routine classroom lecture should be reduced in its role as the primary teaching method. It should be used merely to introduce broad areas and should permit the students to discover details in small groups or on their own. Individualized learning depends heavily upon self-instructional materials, audio-visual learning aids, and student tutors.

To operate successfully, the learning environment must be free and open, but well ordered and managed with specific objectives in mind. Given such an environment, each student enters at his or her own level of achievement and moves along at his or her own rate of speed. A contract system may be used to monitor and improve upon the achievement rate. Progress is measured against individual performance rather than against that of the class as a whole. This allows students of all ability ranges to be in the same class. The high achievers can move ahead freely without being hampered by their slower classmates and can explore enrichment quests on their own. On the other hand, low achievers, already discouraged by repeated failures, are not threatened by further failure. They start wherever they are academically and attitudinally and immediately receive positive experiences which encourage them to progress.

Students need not accomplish modules in the same order. The instructor may prescribe or may negotiate with the student a selection of modules to accomplish a particular student's career goal, depending upon the student's interests and achievement level. Evaluation through pretesting may indicate that a student can skip over an entire module or part of a module.

The role of instructor becomes one of learning facilitator. The instructor prescribes the framework and procedures whereby the learner can accomplish the terminal performance objectives which will be consistent with the entry-level requirements for the career goal.

The wide cross section of learning modules suggested in this career cluster is designed to provide as great a selection of job entry-level skills as appears practical considering resource and time restraints. Individual requirements differ from school to school; therefore, the design of this learning system provides for the selection of modules to satisfy particular needs.

Most of the curriculum materials suggested in this cluster can be ordered from either Kodak Instructional Materials, Eastman Kodak Company, Rochester, New York 14650 or A. B. Dick Company, 5700 West Touhy Avenue, Chicago, Illinois 60648.

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SUGGESTIONS FOR ORGANIZATION OF INSTRUCTION

In order to facilitate students in completing performance objectives of the learning system and to provide for necessary management, the following list of instructor objectives is recommended:

1. Provide orientation session(s) for students enrolled in Graphic Communications.

2. Provide students with assistance in module planning and completing learning activities.

3. Establish basic work groups (concentrating on a module of study) for the students and place each student in one of the groups of his choice. (This concept is described in Appendix A.)

4. Provide a group rotation chart that describes the rotation pattern for each group of students.

5. Develop individual contracts with students to define the related learning activities. (Contracts are explained in Appendix B.)

6. Distribute all module objectives to students and assist in relating these objectives to entry-level skill requirements for the Graphic Communications industry.

7. Provide students with assistance in developing individual performance objectives before completing and signing of the contracts.

8. Assist students in completing performance objectives by providing demonstrations of skills and concepts for each module of instruction.

9. Provide for selection of group leaders on a week-to-week rotation basis.

10. Meet with each group leader on the first day of rotation and establish procedures for the completion of objectives for each week.

11. Provide opportunities where students can observe the activities of individuals in a variety of Graphic Communications jobs and assist them to relate the educational goals of the Graphic Communications Career Cluster to the development of entry-level skills.

The curriculum of the Graphic Communications Career Cluster is designed to prepare students for entry into one of a broad selection of occupations or continuing post-secondary education.

The relationship of the courses or modules to preparation for entry into particular jobs has been shown on the wall charts labeled:

- Graphic Communications Career Cluster

- Preparation Requirements for Graphic Communications Careers

COURSE MODULES AND LENGTH OF INSTRUCTION

This career cluster as outlined allows for a variety of career programs ranging from less than a semester to two years of training. Since the curriculum is individualized and students work at different rates of performance, it is difficult to specify exact times for accomplishment. The following list, therefore, shows an approximation of the average student time it takes to accomplish the performance objectives and is useful only as a general reference for planning.

Module	Estimated Learning Time in Hours
Orientation--Communication with Graphics	10
Artwork	12
Image Assembly	18
Photo-conversion	20
Image Carrier Preparation	10
Image Transfer (Offset)	40
Lithographic Platemaking	38
Color Separation	180
Finishing Procedures	10
Line Photography	25
Halftone Photography	30
Still Photography	90
Cinematography	45
Beginning Drafting	90
Intermediate Drafting	180
Advanced Drafting/Illustration	180
Introduction to Fluid Duplicating	5
Duplicator Operation	5
Master Imaging	12
Office Artwork Preparation	12
Stencil Typing	10
Stencil Imaging	5
Mimeographing I & II	10
Decision Making	20
Image Transfer (Letterpress)	20

ORIENTATION--COMMUNICATION WITH GRAPHICS

DESCRIPTION

Communication with Graphics ... sets the stage for the student of graphic communications by describing the wide range of information and materials covered by graphics. This module is intended to provide the incentive to learn, to be involved, to discover how those in the world around each of us communicate ideas. The text is designed to help the teacher interest, encourage, and excite the student about the field of graphic arts.

LEARNING TIME

Hours: 10

OBJECTIVES

Given the proper instruction and materials, the student will be able to:

1. List and explain the role of each component within the communications cycle

   Man the Communicator

   Man the Producer

   Man the User

   Man the Humanitarian

   and describe the relationship between them by giving explicit examples of each of the terms.

2. Diagram the cycle for a communications problem.

3. Explain how techniques included in one or more of the following graphics production components were combined to produce a communications message presented in the examples of this module.

   Artwork

   Image Assembly

   Photo-conversion

   Image Carrier Preparation

   Image Transfer

4. Describe how the illustrations or pictures used in the orientation text influence the reader. The graphics in the text present concepts which could change the behavior of the reader.

Evaluation of performance will be measured by objective student questions and reflections. The student's achievement level will be judged through subjective teacher evaluations based on questions and answers received from the student.

MODULE OUTLINE

A. Cover page
B. Graphic Communications Cycle
C. Audience Behavior
D. Symbols Communicate
E. Total Systems Concept of Communications
F. Symbols Generate Ideas
G. Process of Communications
H. Technical Development Influences Graphic Communications
I. Technology Produces Change
J. Communications Geared to Audience
K. Communications and Man's Basic Needs
L. Process of Learning to Communicate
M. Social Powers Influence Ideas Transmitted to Individuals
N. Visualizing and Conceptualizing Ideas
O. Detailing Comprehensive Ideas
P. Graphic Sequence
Q. Basic Purpose of Communications
R. Communication Responses - Positive/Negative
S. Importance of Physical Symbols
T. Dimensions Affecting the Total Communications Process
U. Common Threads in Graphic Techniques
V. Historical Look at Communications
W. Production Components
X. Objectives of Graphic Communications
Y. Audience Participation
Z. Communications as a Tool for Learning

CURRICULUM MATERIALS

Communicating with Graphics (text), Graphic Communications Series, A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick

LABORATORY ACTIVITIES

None specified

LABORATORY MATERIALS

None specified

ARTWORK

DESCRIPTION

Artwork ... touches upon basic principles of design and color as they pertain to graphic communications. The student also learns the steps necessary to prepare sketches and layouts for camera-ready artwork.

LEARNING TIME

Hours: 12

OBJECTIVES

Given the proper instruction and materials, the student will be able to:

1. Identify, explain, and sketch the salient features of the design principles of:
   a. proportion
   b. balance
   c. contrast
   d. rhythm
   e. harmony
2. Prepare several thumbnail sketches, and from these select and prepare a rough layout prior to completing a comprehensive layout.
3. Identify, sketch, and label the basic classifications of type or lettering:
   a. Roman
   b. sans-serif
   c. square-serif
   d. text
   e. script
   f. decorative image styles

4. Sketch and label a color wheel showing:
   a. primary
   b. secondary
   c. intermediate
   d. cool
   e. warm
   f. complementary colors

5. Mark photographs for enlargement or reduction by the diagonal line method.

Performance will be measured by written questions. The student's achievement level will be acceptable if the responses are 90% correct.

MODULE OUTLINE

A. Basic Principle of Graphic Design
   1. proportion
   2. balance
   3. contrast
   4. rhythm
   5. harmony

B. Planning for Graphic Communications
   1. thumbnail sketches
   2. rough layout
   3. comprehensive layout
   4. camera-ready copy
   5. letter images

C. Graphic Color
   1. description
   2. primary image transfer colors
   3. primary light colors
   4. secondary colors
   5. psychology of color
   6. explanation of terms

D. Preparation of Artwork

1. description
2. line copy
3. halftones
4. pasteup

CURRICULUM MATERIALS

Artwork (text), Graphic Communications Series, A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick, pages 22-24

Filmstrip: "Your Blueprint to Printing" Graphic Communications Series, A. B. Dick

LABORATORY ACTIVITIES

1. Finding proportionate height with trapeze method
2. Locating the optical center of a rectangle using the 3:5 ratio method
3. Locating the optical center of a rectangle using the trapeze method
4. Sketch layouts depicting formal and informal balance
5. Sketch layouts with contrast, rhythm and harmony
6. Sketch a series of thumbnail layouts
7. Make a comprehensive layout from a rough layout
8. Make enlargements and reductions of a picture or an overlay sheet
9. Make a color wheel with water base paints
10. Prepare an overlay-pasteup sheet with blue-line dimensions

LABORATORY MATERIALS

See Appendix C

IMAGE ASSEMBLY

DESCRIPTION

Image Assembly ... presents the basic methods and materials used in assembling images for printing. Various images needed for photo-conversion are described, and activities for their assembly are suggested.

LEARNING TIME

Hours: 18

OBJECTIVES

Given the proper instruction and materials, the student will be able to:

1. Identify and describe the 7 basic methods of image assembly.
2. List the functions of computers in graphic communications.
3. Paste up camera-ready copy from assembled images.
4. Image a direct-image master for reproducing a minimum of 100 copies with acceptable ink density.

Performance will be measured by written questions. The student's achievement level will be acceptable if the responses are 90% correct.

MODULE OUTLINE

A. New graphic communications terms

B. Advantages and disadvantages of various methods of image assembly

C. Practical applications of the special measuring system used by graphics industry

D. Extent of computer applications in image assembly

E. Steps necessary for correct image pasteup

F. Preparing direct image masters

CURRICULUM MATERIALS

Image Assembly (text), Graphic Communications Series, A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick, pages 25-27

LABORATORY ACTIVITIES

1. Gather samples of various images
2. Assemble sample images and make pasteup
3. Prepare camera-ready pasteups
4. Prepare camera-ready pasteups using justified and unjustified copy

LABORATORY MATERIALS

See Appendix C

PHOTO-CONVERSION

DESCRIPTION

Photo-conversion ... presents basic methods of converting camera-ready images to film negatives or positives. The processes, materials, and tools of this special kind of photography are used in the preparation of image carriers.

LEARNING TIME

Hours: 20

OBJECTIVES

Given the proper instruction and materials, the student will be able to:

1. Identify various camera types and list some of their uses.
2. Explain how images are formed in the camera by drawing a diagram with projection lines from the copyboard through the lens system.
3. List the controls that adjust the exposure of photo-conversion film.
4. List the way photo-masks are made by photo-conversion
5. Demonstrate an understanding of film processing steps by drawing a diagram which shows the relative location of the processing trays including the approximate processing times for each solution.

Performance will be measured by written questions. The student's achievement level will be acceptable if the responses are 90% correct.

MODULE OUTLINE

A. Basic Functions of the Camera

B. Camera Types and their Applications

C. Elements of the Theory of Light and Color

D. Types of Light-sensitive Materials Used in Photography

E. Procedures for Exposing and Processing Photographic Materials

F. Principles and Practices of Graphic Arts Photo-conversion

G. Uses of Film Negatives and Positives

CURRICULUM MATERIALS

Photo Conversion (text), A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick, pages 28-31

LABORATORY ACTIVITIES

1. Prepare a test card used in calibrating line negatives
2. Make exposures and develop film for line negatives
3. Properly mix development chemicals
4. Make a film contact
5. Expose and develop line negative material
6. Produce finished negatives from line color negatives
7. Make photographs with view camera
8. Expose and develop straight line copy
9. Demonstrate posterization by exposing negatives
10. Make an 8 x 10 enlargement from a 4 x 5 continuous tone negative
11. Prepare and maintain a notebook of all photo-conversion assignments

LABORATORY MATERIALS

See Appendix D

IMAGE CARRIER PREPARATION

DESCRIPTION

Image Carrier Preparation ... presents, describes, and illustrates the preparation of image carriers. The wide variety of carriers produced mechanically or photographically is discussed.

LEARNING TIME

Hours: 10

OBJECTIVES

Given the proper instruction and materials, the student will be able to:

1. Identify and list the procedures of image carrier preparation including:
   a. operations of layout
   b. stripping
   c. image carrier exposing and processing
2. Compare and describe conventional procedures with the new automated plate processing systems.

Performance will be measured by written questions. The student's achievement will be acceptable if the responses are 90% correct.

MODULE OUTLINE

A. Various types of image carriers and their application
B. Steps necessary for making image carriers
C. New systems for image carrier preparation
D. New graphic communications terms

CURRICULUM MATERIALS

Image Carrier Preparation (text), Graphic Communications Series, A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick, pages 32-35

Filmstrips: "Preparing Presensitized Metal Offset Plates," "The Paper Master," Graphic Communications Series, A. B. Dick

LABORATORY ACTIVITIES

1. Prepare a short-run paper master
2. Prepare a flat from ruled marking paper and a line negative
3. Strip a flat
4. Demonstrate image carrier exposure operations
5. Demonstrate proper image carrier processing
6. Prepare a flat for a multiple exposure on a single metal plate
7. Properly expose and process a metal image carrier

LABORATORY MATERIALS

See Appendix C

IMAGE TRANSFER
(OFFSET)

DESCRIPTION

Image Transfer (Offset) ... describes and illustrates the procedures, materials, and equipment used in transferring images to paper.

LEARNING TIME

Hours: 40

OBJECTIVES

Given the proper instruction and materials, the student will be able to:

1. Identify and describe the 5 basic systems of offset lithography image transfer equipment.
2. Adjust these systems for satisfactory performance prior to image transfer.
3. Place an image carrier on the offset equipment.
4. Start the machine and maintain image transfer for a minimum of 100 sheets.
5. List and describe various offset inks, papers, and supplies.

Performance will be measured by written questions testing the student's retention of information about offset inks, papers, and supplies, with a 90% correct response.

MODULE OUTLINE

A. New Terms

B. Concept of 5 Basic Systems Used in Offset Lithography

C. Practical Procedures of Operating Image Transfer Machines

D. How to Recognize and Select the Various Kinds of Papers and Inks

CURRICULUM MATERIALS

Image Transfer (text), Graphic Communications Series, A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick pages 36-38

Filmstrips: "Offset Inks and Printing Papers," "Tips for the Offset Operator," "Offset and You," "Operating a Floor Model Offset," Graphic Communications Series, A. B. Dick

LABORATORY ACTIVITIES

1. Operate A. B. Dick 360 offset duplicator
2. Assemble and display samples of offset papers
3. Properly position aluminum plate on offset machine
4. Test for pH of various solutions and mixtures
5. Recover dampening system rollers
6. Remove glaze from ink system rollers
7. Demonstrate how to make additions, corrections, deletions, and how to rerun a direct image paper master
8. Using a metal master or masters, run a minimum of 100 copies of the following jobs on the A. B. Dick 360 offset duplicator:
   a. run 2-color line and/or halftone
   b. three or more colors, line and/or halftone
9. Run different weights of paper from the same master

LABORATORY MATERIALS

See Appendix C

LITHOGRAPHIC PLATEMAKING

DESCRIPTION

Lithographic Platemaking ... guides student activities in preliminary layout and stripping as well as installing and running the plates on duplicators and printing presses. This is an enrichment unit for students with advanced graphic skills.

LEARNING TIME

Hours: 38

OBJECTIVES

Given the necessary instruction and laboratory materials, the student will be able to:

1. Describe the 4 major printing processes using trade terminology.
2. Demonstrate the procedures for layout and stripping of a flat.
3. Describe the functions of the flat and of the goldenrod paper, proper use of stripping tools and materials, and the purpose of basic reference and stripping lines.
4. Discuss physical characteristics of plates in general and describe characteristics of surface, deep-etch, multimetal, and shallow-relief plates. Select appropriate plates for specific jobs.
5. Demonstrate proper exposing and processing techniques for the Kodak Diazo Litho Plate D (both sides) and the Kodak Polymatic Litho Plate LN.
6. Describe proper techniques for additions and corrections and for gumming plates.
7. Define differences between additive and subtractive process.
8. Demonstrate the use of Kodak Control Scale T-14.
9. Demonstrate installation, pressrun, gumming, and removal of a plate, pointing out the location and function of major systems on the press.
10. Demonstrate procedures performed prior to the beginning of a pressrun, stressing the relationship of each procedure to smooth press operation, plate life, and the quality of the printed sheet.

11. List possible trouble spots and adjustments to be made during pressrun.

MODULE OUTLINE

A. The Four Major Printing Processes

B. Laying Out and Stripping a Flat

C. Varieties of Lithographic Plates

D. Exposure and Processing of Presensitized-Surface Plates

E. Offset Press Fundamentals

F. Press Setup and Basic Adjustments

CURRICULUM MATERIALS

Lithographic Platemaking Curriculum Guide, Kodak (Teacher's Manual)

Lithographic Platemaking Student Workbook, Kodak

Kodak Control Scale T-14, Kodak Publication Q-55

Kodak Diazo Litho Plate D, Publication Q-50

Kodak Polymatic Litho Plate LN, Publication Q-210

Platemakers Ready Reference, Publication Q-56

Platemakers Ready Reference, Publication Q-211

LABORATORY ACTIVITIES

1. Lay out and strip a flat
2. Expose and process a Kodak Diazo Litho Plate D (both sides) and a Kodak Polymatic Litho Plate LN
3. Gum and store each plate
4. Install, pressrun, gum, and remove a plate
5. Mix a fountain solution to a given pH

LABORATORY MATERIALS

All units of the Kodak Lithographic Platemaking Guide include lists of equipment and materials required for successful completion of each specific unit. Since different instructors may desire to delete various activities, no attempt is made to list materials here.

COLOR SEPARATION

DESCRIPTION

Color Separation ... presents the basic principle of 4-color reproduction. Concepts of color reproduction are emphasized and technical procedures are developed. Skills from many previous activities are brought together in the 4-color process. For this reason, fundamentals of line photography, halftone photography, and lithographic platemaking are prerequisites. This is an advanced course that is very demanding.

LEARNING TIME

Hours: 180

OBJECTIVES

Given the necessary instruction and laboratory materials, the student will be able to:

1. Demonstrate an understanding of the procedures necessary to produce a good halftone negative from continuous-tone copy.
2. Describe the characteristic curve which relates density to exposure.
3. Read A, M, and B patch densities on a densitometer.
4. Take integrated dot density readings.
5. Identify three primary and subtractive colors.
6. Provide three separation negatives, without color correction masks.
7. Proof the separation negatives to produce the full range of colors.
8. Discriminate between proofs with highlight detail and those without it, and demonstrate the techniques of bump exposure.
9. Discriminate between poor gray balance and good gray balance in the original, and describe methods to improve balance.
10. Describe the imperfections of uncorrected printing inks and demonstrate mask's effect on color.

11. Produce a 4-color reproduction using the silver-masking, indirect-color-separation techniques.

MODULE OUTLINE

A. Review of Halftone Photography

B. Sensitometry

C. Color Theory

D. Correcting Tone Reproduction

E. Correcting Gray Balance

F. Color Correction (Masks)

G. Indirect Screening

CURRICULUM MATERIALS

Color Separation Curriculum Guide, Kodak (Teacher's Manual)

Color Separation Student Workbooks I and II, Kodak

Basic Color for the Graphic Arts, Kodak Publication Q-7

Silver Masking of Transparencies with Three-Aim-Point Control, Kodak Publication Q-7A

How to Use the Kodak Graphic Arts Exposure Computer, Kodak Publication Q-12A

LABORATORY ACTIVITIES

1. Make a halftone print
2. Use a densitometer
3. Make 3 uncorrected separations and proof them
4. Make 3 prints with the same highlight density, but with different no-screen exposure
5. Print gray balance chart
6. Use Kodak Direct-Screen Color-Separation Dial
7. Print color bars and read color densities
8. Do densitometer readings of color patches
9. Produce a 4-color reproduction

LABORATORY MATERIALS

For list of materials and equipment see Appendix E

FINISHING PROCEDURES

DESCRIPTION

Finishing Procedures ... describes and illustrates the many processes used in finishing. The processes covered include: folding, slitting, creasing, gathering, collating, sewing, stamping, gluing, smashing and trimming.

LEARNING TIME

Hours: 10

OBJECTIVES

Given the necessary instruction and materials, the student will be able to:

1. Correctly solve paper cutting problems.
2. Identify and label salient features of finishing equipment.
3. Recognize and make common paper folds.
4. Identify and label the various methods of paper fastening.

Performance will be measured by written questions. The student's achievement level will be acceptable if responses are 90% correct.

MODULE OUTLINE

A. New Terms

B. Various Processes Used in Finishing Graphic Material

C. Advantages and Disadvantages of Various Types of Fastening

D. Importance of Finishing in Relation to Other Areas of Graphic Communications

CURRICULUM MATERIALS

Finishing Procedures (text), Graphic Communications Series, A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick, pages 39-40

LABORATORY ACTIVITIES

1. Crease paper manually to illustrate principle of creasing
2. Score paper manually to illustrate principle of scoring
3. Adjust folding machine for various folds adaptable to equipment
4. Make several hand-folded signatures to illustrate principle of collating marks
5. Adjust finishing equipment to accommodate varying sizes of lifts for its particular operation
6. Fasten sheets in conventional, loose-leaf, and mechanical methods

LABORATORY MATERIALS

See Appendix C

LINE PHOTOGRAPHY

DESCRIPTION

Line Photography ... acquaints the student with the latest and most significant aspects of line photography technology. The basic fundamentals of line photography and basic camera principles, as well as operation of the copy camera are explained. Exposure, processing and development of negatives are some of the activities. This is an enrichment unit for students with advanced graphic skills.

LEARNING TIME

Hours: 25

OBJECTIVES

Given the necessary instruction and laboratory materials, the student will be able to:

1. Describe, in general terms, the process by which the "copy" becomes the "line negative" and how this process fits into the graphic arts field.
2. Describe the process camera in general terms.
3. Write the basic functions of 3 major parts of the process camera.
4. Explain why the image is wrong side up.
5. Explain the relationship of movement of camera components to size and sharpness of the image.
6. Prepare tray solutions and set up the processing room with the trays properly positioned.
7. Adjust the camera for a proper, specified exposure; expose a sheet of film; and process it to an acceptable negative of the copy.
8. Select a good negative from a group of good and bad, and identify causes of the bad negatives.
9. Describe the structure and light-sensitive characteristics of film.
10. Produce a negative of a specified portion of the copy which has a minimum of pinholes.

11. Produce a properly exposed negative of a specified portion of the copy at different specified times.

12. Calculate both the exposure and scaling settings to produce a good negative of proper image size specified by copy with marked finish dimensions.

13. Set the camera, check the focus, and produce a good negative with the proper image size as specified with marked copy.

14. Make an intermediate negative, contact positive, and final negative which is properly exposed and of a size larger than the original range of the camera.

15. Predict the results of changes in developing time, temperature, or agitation.

Evaluation will depend upon whether the student can produce a good line negative, given appropriate materials and conditions. Accomplishment is also measured by written performance tests.

MODULE OUTLINE

A. Learning the Fundamentals of Line Photography

B. Using Basic Camera Principles

C. Preparing for Processing

D. Exposing Line Negatives and Processing

E. Evaluating Negatives

F. Discovering the Structure and Characteristics of Film

G. Examining the Relationship of f-Number to Exposure

H. Learning f-Number Time Relationship

I. Producing Enlarged and Reduced Negatives

J. Making 2-step Reductions

K. Processing Variables

L. Student Evaluation

CURRICULUM MATERIALS

Line Photography Curriculum Guide, Kodak (Teacher's Manual)

Line Photography Student Workbook, Kodak

Basic Photography for the Graphic Arts, Kodak Data Book, Q-1

Photography for the Printer, Kodak Service Publication, Q-28

Kodak Color Separation Guides, 7-inch, Kodak Publication Q-13

Slide Presentation, "Line Photography" Kodak ED-10-1

LABORATORY ACTIVITIES

1. Mix processing chemicals
2. Expose and process a line negative
3. Discover the structure and characteristics of film
4. Produce a negative with masked areas

Note: These are a sample of the activities suggested. Others can be discerned from reading the objectives.

LABORATORY MATERIALS

All units of the Kodak Line Photography Curriculum Guide include lists of equipment required. For a list of disposable materials see the following page.

LINE PHOTOGRAPHY LABORATORY MATERIALS

PRODUCT		SIZE/SHEETS PER PKG.	PACKAGES/NUMBER OF STUDENTS*
			24 Students
Films:			
KODALITH Ortho Film 6556, Type 3		8 x 10 50 sheets/pkg.	3 pkgs.
		4 x 5 50 sheets/pkg.	3 pkgs.
KODAK Autopositive Film (ESTAR Base)		8 x 10 50 sheets/pkg.	3 pkgs.
KODALITH Pan Film (ESTAR Base)		4 x 5 25 sheets/pkg.	3 pkgs.
Paper:			
KODALITH Ortho Paper (Standard)		8 x 10 25 sheets/pkg.	2 pkgs.
KODAK EKTAMATIC Photomechanical Paper, Grade T		8 x 10 100 sheets/pkg.	2 pkgs.
Miscellaneous:			
KODAGRAPH Sheeting, Yellow		11 x 13 6 sheets/pkg.	3 pkgs.
KODALITH Translucent Material		8½ x 11 100 sheets/pkg.	2 pkgs.
Chemicals:			
KODALITH Liquid Developer:	Part A	5-gal Cubitainer	2
	Part B	5-gal Cubitainer	2
KODAK Acetic Acid, 28%		16-oz bottle	70 bottles
KODAK Rapid Fixer (liquid)		5-gal pkg. 30-gal pkg.	1 pkg. 2 pkgs.

Note: The above quantities are based on the assumptions that: a) students use film as recommended in the curriculum, b) each student or group of students prepares new chemicals for each procedure, c) trays used are minimum size acceptable for film being used.

* If supplementary lab experiences are to be added to those suggested in the curriculum, additional quantities of film, paper, and chemicals must be obtained. Actual amounts should be based on the extent of such experiences and the number of students participating.

035

HALFTONE PHOTOGRAPHY

DESCRIPTION

Halftone Photography ... guides student experiences in fundamental aspects of halftone photographic technology. This course follows and builds upon the Line Photography unit. Producing halftone negatives, evaluating halftones, density range, and learning about halftone screens are some of the topics included. This is an enrichment unit for students with advanced graphic skills.

LEARNING TIME

Hours: 30

OBJECTIVES

Given the necessary instruction and laboratory materials, the student will be able to:

1. Determine that line photography cannot satisfactorily reproduce continuous tone photographs.
2. Describe in specific terms the process necessary to produce a halftone negative.
3. Produce a halftone negative and from it a contact print.
4. Select the most successful reproduction from a collection of halftone reproductions.
5. Determine that any total system is capable of reproducing only a limited density.
6. Demonstrate that a flash exposure will produce dots in the shadow area where no dots appeared before.
7. Use the Kodak Graphic Arts Exposure Computer to determine proper main exposure and flash exposure and make a good halftone negative and contact print.
8. Make a line negative from a mechanical that has both line copy and a halftone print.
9. Name and give the advantages of the various types of screens, using designated terms.

Evaluation will depend upon whether the student can produce a good halftone negative from continuous tone copy, demonstrating an

understanding of the procedures which are necessary to combine the halftone negative with a line negative to produce a contact print. Accomplishment is also measured by written performance tests.

MODULE OUTLINE

A. Reproducing Continuous Tone Images with Line Photography

B. Learning the Fundamentals of Halftone Photography

C. Producing Halftone Negatives

D. Evaluating Halftones

E. Learning about Density Range

F. Extending the Density Range

G. Using the Kodak Graphic Arts Exposure Computer

H. Making a Negative from a Line Mechanical with Halftone Paper Prints

I. Learning about Halftone Screens

J. Student Evaluation

CURRICULUM MATERIALS

Halftone Photography Curriculum Guide, Kodak (Teacher's Manual)

Halftone Photography Student Workbook, Kodak

Halftone Methods for the Graphic Arts, Kodak Data Book Q-3

Making Halftones with the Improved Kodalith Autoscreen

Ortho Film 2563, Kodak pamphlet Q-20

Kodak Contact Screens--Types and Applications, Kodak Pamphlet Q-21

LABORATORY ACTIVITIES

1. Make a halftone negative and from it a contact print
2. Copy a Kodak Reflection Density Guide, using increased and decreased exposure
3. Copy a Kodak Reflection Density Guide, using a given main exposure and a flash exposure.

Note: These are a sample of the activities suggested. Others can be discerned from reading the objectives.

LABORATORY MATERIALS

All units of the Kodak Halftone Photography Curriculum Guide include lists of equipment required. For a list of disposable materials, see the following pages.

HALFTONE PHOTOGRAPHY LABORATORY MATERIALS

PRODUCT	SIZE/SHEETS PER PKG.	PACKAGES/NUMBER OF STUDENTS*
		24 Students
Films:		
KODALITH Ortho Film 6556, Type 3	8 x 10 50 sheets/pkg.	3 pkgs.
	4 x 5 50 sheets/pkg.	3 pkgs.
KODALITH AUTOSCREEN Ortho Film 6563	8 x 10 25 sheets/pkg.	2 pkgs.
Paper:		
KODALITH Ortho Paper (Standard)	8 x 10 25 sheets/pkg.	2 pkgs.
KODAK EKTAMATIC Photomechanical Paper, Grade T	8 x 10 100 sheets/pkg.	2 pkgs.
Contact Screens:		
KODAK Gray Contact Screen (conventional dot)	65-line 9 x 11	24 (1 ea)
KODAK Gray Contact Screen (elliptical dot)	110-line 9 x 11	24 (1 ea)
KODAK Magenta Contact Screen (positive)	120-line 9 x 11	24 (1 ea)
KODAK Magenta Contact Screen (negative)	110-line 9 x 11	24 (1 ea)
Chemicals:		
KODALITH Liquid Developer, Part A	5-gal Cubitainer	2
Part B	5-gal Cubitainer	2
KODAK Acetic Acid 28%	16-oz bottle	100 bottles
KODAK Rapid Fixer (liquid)	5-gal pkg.	5
	30-gal pkg.	2
KODAK EKTAMATIC A 10 Activator**	4-qt bottle	1 bottle
KODAK EKTAMATIC S 20 Stabilizer**	4-qt bottle	1 bottle

Note: The above quantities are based on the assumptions that: a) students use film as recommended in the curriculum, b) each student or group of students prepares new chemicals for each procedure, c) trays used are minimum size acceptable for film being used.

* If supplementary laboratory experiences are to be added to those suggested in the curriculum, additional quantities of film, paper, and chemicals must be obtained. Actual amounts should be based on the extent of such experiences and the number of students participating.

** These chemicals should be ordered only if a KODAK EKTAMATIC Processor (listed in several units in the Curriculum Guide as optional equipment) will be used.

039

STILL PHOTOGRAPHY

DESCRIPTION

Still Photography ... is a detailed study of photographic techniques and procedures used by professional photographers for purposes of graphic communication. Composition, lighting, exposure control, and darkroom techniques are among the subjects covered. Techniques of close-up and candid photography, photo stories, sports and action photography are explored.

LEARNING TIME

Hours: 90

OBJECTIVES

Given the appropriate instruction and materials, the student will be able to:

1. Judge negative quality in preparation for printing photos.
2. Select appropriate paper for making prints.
3. Make contact prints of acceptable contrast.
4. Process film to make printable negatives.
5. Make enlargements from acceptable negatives using various control techniques.
6. Mix chemicals for economy and consistent results.
7. Practice darkroom safety to protect oneself and equipment.
8. Finish and mount prints for exhibit.
9. Compose pictures to achieve pleasing balance and place proper emphasis on the subject.
10. Light subjects indoors and out demonstrating flexibility under different types of conditions.
11. Use exposure meters to get accurate appraisals of lighting conditions.
12. Determine settings for existing light.
13. Select proper filters to dramatize and punctuate certain scenes.
14. Use accessory lenses to frame just the area desired with greatest flexibility.

15. Organize photo stories to present facts and express viewpoints clearly.

16. Use close-up lenses to photograph small objects.

17. Take candid shots to get realistic and unposed pictures.

18. Take sports and action stills to capture the feeling of movement.

Evaluation of achievement will depend upon successful accomplishment of laboratory exercises.

MODULE OUTLINE

I. Darkroom Procedures
   - A. Introduction to Equipment and Safety Procedures
   - B. Contact Printing
   - C. Selection, Mixing, and Storing Chemicals
   - D. Negative Processing
   - E. Enlarging Negatives
   - F. Print Enlargement Control
   - G. Ferrotyping
   - H. Dry and Wet Mounting of Prints
   - I. Vignetting and Texture Screened Enlargements
   - J. Convergence and Combination Printing
   - K. "Pushing" Processing
   - L. Finishing Controls

II. Picture Taking and Enlarging Techniques
   - A. Elements of Composition
   - B. Outdoor Lighting Techniques
   - C. Indoor Flash and Studio Lighting
   - D. Sharpness and Exposure for Close-up Photography
   - E. Techniques of Candid Photography
   - F. Techniques of Action Photography
   - G. Organizing Photo Stories
   - H. Exposure Control with Incident and Reflected Light Meters
   - I. Filters
   - J. Existing Light and Night Photography
   - K. Accessory Lenses

CURRICULUM MATERIALS

See pages following Laboratory Activities for list of pamphlets

Slides: Advanced Camera Handling, No. 0029
Pictures by Existing Light, No. 0005
Let's Make an Enlargement, No. 0080
Print Finishing Techniques, No. 0004
Processing Black and White Film, No. 0079

Eastman Kodak Audio-Visual Library Distribution, Rochester, New York

LABORATORY ACTIVITIES

1. Make contact prints from negatives provided
2. Properly mix and store chemicals for future use
3. Make contact prints from negatives previously exposed
4. Compare quality of prints with those professionally printed
5. expose and process film to obtain acceptable negatives
6. Make 8" x 10" enlargements of negatives previously processed
7. Make enlargements using dodging and burning techniques
8. Make ferrotype enlargements
9. Mount prints using dry and wet techniques
10. Make enlargements using vignetting and screen techniques
11. Correct distorted lines in negatives using convergence techniques
12. Push processing of negatives taken under adverse lighting conditions
13. Demonstrate toning, spotting, and etching techniques in photo finishing
14. Expose a roll of film demonstrating rules of composition
15. Expose a roll of film making pictures of scenics, buildings, and informal groups guided by principles of composition
16. Plan and shoot photographs suitable for a photo story
17. Expose a roll of film demonstrating side lighting, back lighting, and soft lighting
18. Expose a roll of film using flash techniques including bounce and bare bulb flash
19. Expose film using studio lighting

20. Expose and process pictures using close-up techniques

21. Expose and process candid and action photos

22. Expose and have processed a roll of black and white and a roll of color film using filters and an exposure meter

23. Expose and process pictures using existing light techniques

24. Expose and process pictures demonstrating the advantages of accessory lenses

LABORATORY MATERIALS

See following pages for lists of curriculum and laboratory materials.

STILL PHOTOGRAPHY CURRICULUM MATERIALS

Teacher's Manuals: Outline For Teaching a Course in Basic Darkroom Technique, AT-107; Outline For Teaching a Course in Advanced Photography, AT-108

Kodak Instructional Materials
Eastman Kodak Company, Rochester, New York 14650

Student Pamphlets: Each student should have one each of the following Kodak Customer Service Pamphlets.

TITLE	CODE NO.
Maintaining Your Still and Movie Camera and Projector	AA-1
Accurate Exposure with All Types of Meters	AA-2
Slide Showmanship with a KODAK CAROUSEL Projector	AA-6
A Glossary of Photographic Terms	AA-9
Close-up Pictures with 35mm Cameras	AB-10
Close-up Pictures of Flowers and Other Small Objects	AB-11
Successful Flash Operation with Battery-Powered Flash	AC-4
Pictures with Photolamps	AC-5
Composition	AC-11
Exposure with Portable Electronic Flash Units	AC-37
Advanced Camera Techniques for 126 and 35mm Cameras	AC-56
Pictures by Existing Light	AC-61
Getting the Most Out of KODAK High Speed EKTACHROME Films	AE-2
Your Programs from Kodak	AT-1
Photo Reports Make it Happen	AT-5
Student Pictures for School Publications	AT-13
A Glossary of Photographic Terms	AA-9

TITLE	CODE NO.
Enlarging in Black-and-White and Color	AG-16
Choosing Your KODAK Black-and-White Photographic Papers	AG-26
Basic Developing, Printing, Enlarging	AJ-2
How to Develop and Print Black-and-White Films	AJ-3
Tips for Processing KODAK 126 Black-and-White Films	AJ-4
Some Chemical Reactions in Photography	AJ-15
How to Use KODAK Developer D-76	AJ-16
Push-Processing KODAK Black-and-White Films	AJ-30
Darkroom Design for Amateur Photographers	AK-3

EQUIPMENT AND MATERIALS

Each student will need the following:

- A still camera in good working order
- Eight rolls of film, including two rolls of high-speed film (either color or black-and-white)
- A flash unit
- Twenty 4 x 6-inch index cards
- Close-up attachments to fit his camera
- A cardboard measuring device or focal frame (to be made by the student for the assignment) unless the student uses a single-lens reflex camera

Optional Equipment:

- An adjustable or automatic camera with a fast lens (maximum opening at least f/2.8)
- An exposure meter, if the camera doesn't have a built-in meter
- Filters for black-and-white and color films
- One roll of color film
- A telephoto lens and a wide-angle lens

The following is required:

- A slide projector (and a slide illuminator, if possible)
- A room suitable for projecting slides
- A setup for studio lighting (three photolamps and a plain background)--optional

A Special Word About Chemicals

If you select a single (and appropriate) developer (KODAK Developer D-76 and KODAK Replenisher D-76R) and fixer (KODAFIX Solution) for film, and a single developer (KODAK VERSATOL Developer) and fixer (KODAFIX Solution) for paper, and use only those chemicals throughout the course, you will find that students will accustom themselves to darkroom procedures faster and with less confusion.

Other chemicals may be added to the list. KODAK Hypo Clearing Agent will greatly speed up washing of prints and negatives, and a stop bath such as KODAK Indicator Stop Bath should be used in place of a water stop bath. It stops development instantaneously and more effectively than water; it prevents tiny holes in negatives and stains in prints, and it saves time and extends the life of your fixer.

Paper Choice

Again, if you select a single paper with several contrast grades, your students can accustom themselves more easily to a single way of doing things. Keep the course simple by eliminating variables. For contact prints, use white KODAK VELOX Paper with a glossy (F) surface, grade 2. KODABROMIDE Paper is a fast, general-purpose enlarging paper with high speed and exceptional development latitude. Contrast and image tone remain uniform over a wide range of exposure and development times. You will find that a supply of white KODABROMIDE Paper F (glossy) will help the class move more smoothly. (When students will tone their prints, it will be necessary to use KODAK MEDALIST Paper F in appropriate contrast grades because MEDALIST Paper tones well with many different toners.)

CINEMATOGRAPHY

DESCRIPTION

Cinematography ... is designed to teach students to plan, film, edit, and present a short movie (3-5 minutes). No previous experience in movie making is required. All the student must have is a desire to learn and the enthusiasm to continue.

LEARNING TIME

Hours: 45

OBJECTIVES

Given the appropriate instruction and materials, the student will be able to:

1. Use movie making as a means of visual expression and as a method to record and preserve important events.
2. Expose movie film properly for bright and colorful scenes.
3. Focus clearly for sharp and pleasing movies.
4. Steady camera handling for clear and comfortable viewing of movies.
5. Compose scenes to keep attention on the primary subject and to exercise creativity in arrangement.
6. Film indoors as well as out for complete flexibility.
7. Control and utilize elements of filmmaking, such as camera angle, camera-to-subject distance, continuity, and scene length, in a manner which will grasp and maintain viewer interest.
8. Assemble film scenes to tell a story concisely and clearly.

Evaluation of achievement will depend upon successful accomplishment of the laboratory exercises.

MODULE OUTLINE

A. Types of Movies

B. The Camera--What It Is and How It Works

C. Film--What It Is and How It Works
   1. film choice
   2. proper loading

D. Camera Techniques
   1. handling
   2. exposure
   3. zooming and panning
   4. scene length

E. Planning the Movie

F. Visual Elements
   1. continuity
   2. camera angle
   3. camera-to-subject distance
   4. editing in the camera

G. Indoor Filming
   1. lighting
   2. exposure

H. Equipment Care and Maintenance
   1. camera and projector
   2. film

I. Editing
   1. scene listing
   2. scene selection
   3. splicing and equipment operation

J. Projection

RRICULUM MATERIALS

Teacher's Manual: Outline for Teaching a Course in Basic Movie Making, AT-106, Kodak

Student Materials: Each student should have one each of the following Kodak Customer Service Pamphlets.

Title	Code No.
Better Movies in Minutes	AD-4
Maintaining Your Still and Movie Camera and Projector	AA-1
A Glossary of Photographic Terms	AA-9
Easy Ways to Make Still and Movie Titles	AC-60
What Happened to My Movies?	AD-6
Making a Movie	AD-10
Indoor Movie-Making	AD-11
Movies on the Move--Your Vacation	AD-13
Getting the Most Out of Your 8mm Film	AD-21
Kodak 16mm Movie Films	AD-22
Editing Your Movies	AD-26
Tips on Using Kodak Super 8 Movie Film	AD-28
Care of Your Processed Kodak Movie Films	AD-29
Showmanship in Home-Movie Projection	AD-43
Careers in Motion-Picture Production	C3-87
Kodak Teen-Age Movie Awards	C3-106
How Your Pictures Are Processed at Kodak	A1-117

Films 16mm color.

"Filmmaking Techniques: Camera," 17 minutes
"Filmmaking Techniques: Stage Lighting," 15 minutes
"Filmmaking Techniques: Going on Location," 17 minutes
"Filmmaking Techniques: Lighting on Location," 13 minutes
"Filmmaking Techniques: Editing," 16 minutes
"Filmmaking Techniques: Stunts (fights and falls)," 13 minutes
"Filmmaking Techniques: Overview of 8mm Productions," 17 minutes

Aims Instructional Media Services
P. O. Box 1010, Hollywood, California 90028

"Motion Picture Production - Basic Lighting," No. 0318

"Motion Picture Production - Continuity I and II," No. 0328

"Motion Picture Production - Camera Handling," No. 0348

Eastman Kodak Company, Audio-Visual Library Distribution
Rochester, New York 14650

LABORATORY ACTIVITIES

1. Prepare planning cards prior to shooting a movie
2. Shoot a simple one-roll movie story according to planning cards
3. Shoot a one-roll movie indoors, editing in the camera and using indoor lights
4. Prepare planning cards and shoot a movie using techniques acquired with the purpose of editing to best tell the story
5. Edit film to tell story most effectively

LABORATORY MATERIALS

1 automatic super 8mm camera for every four students

1 super 8mm projector

4 rolls or cartridges of super 8mm film per student

1 projection screen 30" x 40"

1 film editor and splicer for every 2 students

4 indoor movie lights

BEGINNING DRAFTING

DESCRIPTION

Beginning Drafting ... introduces the student to basic drafting techniques - use of the pencil, architect's scale, triangle, compass, drawing board, and T-square. Accuracy and neatness are practiced in a series of drawing projects covering lettering, layout, geometric figures, and multiview drawings. Optional practice in isometric drawing is provided.

LEARNING TIME

Hours: 90

OBJECTIVES

Given the appropriate instruction and materials, the student will be able to:

1. Describe the career requirements and opportunities for the draftsman.
2. Form single-stroke-vertical upper case letters and figures.
3. Read the architect's scale using both full and half scale.
4. Align properly on a drawing board and lay out borderlines and a title block.
5. Use basic drawing instruments.
6. Construct and apply a geometric figure.
7. Describe objects through multiview drawings.
8. Place basic dimensions on a drawing.
9. Draw an isometric pictorial from a three-way drawing. (optional)

Acceptable achievement will be determined by successful accomplishment of laboratory activities and a minimum of 80% success on written tests.

MODULE OUTLINE

A. Nature of Drafting and Related Careers

B. Basic Lettering

C. Reading the Architect's Scale

D. Proper Alignment, Borders, and Title Block

E. Flat Layout Drawing - Geometric

F. Multiview Drawing, Horizontal and Vertical

G. Application of Length, Width, and Height Dimensions in Multiview Drawings

H. Isometric Drawing (optional)

CURRICULUM MATERIALS

Mechanical Drawing (text), 7th edition, French and Svensen. Webster Division, McGraw-Hill, Inc., 1221 Avenue of the Americas, New York, NY 10020

Introductory Mechanical Drawing Problems, Glenn N. Shaeffer. Bruce Publishing Company, 2642 University Avenue, St. Paul, Minnesota 55114

Film Loops: McGraw-Hill, Inc.

Helsel: Mechanical Drawing Film Loops

Sketching Straight Lines	07-028001-0
Sketching Circles and Arcs	07-028002-9
T-Square and Triangles, Part 1	07-028003-7
T-Square and Triangles, Part 2	07-028004-5
Lettering	07-028005-3
Drawing Irregular Curves	07-028006-1
Compasses	07-028007-X
Drawing with Templates	07-028008-8
Inking Techniques	07-028009-6
Drafting Machines	07-028010-X
Understanding Orthographic Multiview Projection	07-028011-8
Spacing Views in Orthographic Multiview	07-028012-6
Developing an Orthographic Multiview Drawing	07-028013-4
Auxiliary Projection	07-028014-2
Full Sections and Half Sections	07-028015-0
Revolved Sections and Removed Sections	07-028016-9
Offset and Broken-out Sections	07-028017-7
Surface Development (Parallel Line)	07-028018-5
Surface Development (Radial Line)	07-028019-3

Surface Development (Triangulation)	07-028020-7
Isometric Drawing	07-028021-5
Oblique Drawing	07-028022-3
One-point Perspective Drawing	07-028023-1
Two-point Perspective Drawing	07-028024-X
Set of 24:	07-079943-1
Guidebook	07-028000-2

LABORATORY ACTIVITIES

1. Tour nearby engineering, architectural, or planning office to see drafting shops and draftsmen
2. After demonstration of lettering techniques, students practice letter formation on prepared exercise sheets
3. Using the architect's scale, measure lengths of lines on exercise sheets and draw various lengths to specification
4. Using the architect's scale, measure lengths of lines on exercise sheets in half scale and draw various lengths to half scale specifications
5. Properly align drawing paper on drawing board and draw borderline and title blocks
6. Using basic drafting instruments, construct an octagon about a circle, letter the word STOP, and add lines to represent a post
7. Using basic drafting instruments, construct a five-pointed star in the center of an 8-1/2" x 11" drawing sheet
8. Completing as many as time permits, prepare multiview drawings of objects showing top, front, and side views
9. Using multiview drawings from #8 above, dimension these for length, width, and height
10. If time permits, using multiview drawings from #9 above, draw isometric pictorials (optional)

LABORATORY MATERIALS

18" T-square	dividers
12" x 17" drawing board	triangular architect's scale
8" 45° triangle	3/4" x 30 yds. drafting tape
8" 30°-60° triangle	#2H drawing pencils
6" bow compass (pencil)	#4H drawing pencils
erasers	

INTERMEDIATE DRAFTING

DESCRIPTION

Intermediate Drafting ... deals with the communication of ideas through drawings, sketches, charts, graphs, and maps. Learning experiences include the development of skills through the use of drafting instruments involved in lettering, sketching, geometric construction, orthographic and pictorial drawing, sections, and working drawings.

LEARNING TIME

Hours: 180

OBJECTIVES

Given the appropriate instruction and materials, the student will be able to:

1. Lay out a border and title block.
2. Develop a record strip.
3. Develop single-stroke upper-case lettering.
4. Develop single-stroke lower-case lettering.
5. Sketch straight lines and arcs.
6. Sketch simple geometric figures and solids.
7. Sketch principal views of objects.
8. Make basic geometric constructions
9. Construct, with instruments, the principal views of several objects.
10. Develop the size and location of dimensions on the principal views of an object.
11. Make drawings to involve limit dimensions.
12. Sketch diagrams of axonometric representation.
13. Sketch diagrams of oblique representation.
14. Sketch diagrams of one-point, two-point, and three-point perspective representation.
15. Develop axonometric drawings with instruments.

16. Develop oblique drawings with instruments.
17. Develop perspective drawings with instruments.
18. Draw primary auxiliary views.
19. Draw secondary auxiliary views.
20. Produce a full section drawing.
21. Produce a half section drawing.
22. Produce a broken-out section drawing.
23. Produce a revolved section drawing.
24. Produce a removed section drawing.
25. Produce an offset section drawing.
26. Develop a drawing showing auxiliary conventions.
27. Make primary revolution view drawings.
28. Make successive revolution view drawings.
29. Make a detailed drawing.
30. Make an assembly drawing.

Acceptable achievement will be determined by successful accomplishment of laboratory activities and a minimum of 80% success on written tests.

MODULE OUTLINE

A. Drafting Fundamentals Review
B. Drafting Construction and Shape Description
C. Auxiliary Views and Sections
D. Size Description
E. Working Drawings
F. Screws, Bolts, and Other Fastenings
G. Cams and Gears
H. Pictorial Drawings
I. Surface Developments and Intersections
J. Specialized Drafting (select major area of interest)
    1. technical illustrations
    2. aerospace drafting
    3. welding drawings
    4. electrical and electronics drafting
    5. architectural drafting

6. structural drafting
7. map drafting
8. graphic charts and diagrams
9. sheet metal

CURRICULUM MATERIALS

Mechanical Drawing (text), 7th edition, Thomas E. French and Carl L. Svensen. Webster Division, McGraw-Hill, Inc., 1221 Avenue of the Americas, New York, NY 10020

Problems in Mechanical Drawing, First Course (workbook), A. S. Levens and A. E. Edstrom. McGraw-Hill, Inc.

Problems in Mechanical Drawing, Second Course (workbook), A. S. Levens and A. E. Edstrom. McGraw-Hill, Inc.

Film Loops: McGraw-Hill, Inc.

Helsel: Mechanical Drawing Film Loops

Sketching Straight Lines	07-028001-0
Sketching Circles and Arcs	07-028002-9
T-Square and Triangles, Part 1	07-028003-7
T-Square and Triangles, Part 2	07-028004-5
Lettering	07-028005-3
Drawing Irregular Curves	07-028006-1
Compasses	07-028007-X
Drawing with Templates	07-028008-8
Inking Techniques	07-028009-6
Drafting Machines	07-028010-X
Understanding Orthographic Multiview Projection	07-028011-8
Spacing Views in Orthographic Multiview	07-028012-6
Developing an Orthographic Multiview Drawing	07-028013-4
Auxiliary Projection	07-028014-2
Full Sections and Half Sections	07-028015-0
Revolved Sections and Removed Sections	07-028016-9
Offset and Broken-out Sections	07-028017-7
Surface Development (Parallel Line)	07-028018-5
Surface Development (Radial Line)	07-028019-3

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Surface Development (Triangulation)	07-028020-7
Isometric Drawing	07-028021-5
Oblique Drawing	07-028022-3
One-point Perspective Drawing	07-028023-1
Two-point Perspective Drawing	07-028024-X
Set of 24:	07-079943-1
Guidebook	07-028000-2

LABORATORY ACTIVITIES

Hands-on activities:

1. Use drawing instruments to develop drawings from text and workbooks with an emphasis on career interests
2. Use reproduction equipment to reproduce class drawings with an emphasis on industrial reproduction processes related to career area

Research:

1. Follow the designing of a project through to its completed state - identify the various drafting careers contributing to the project: tool designers, technical illustrators, industrial designers, etc.

LABORATORY MATERIALS

18" T-square
12" x 17" drawing board
8" 45° triangle
8" 30°-60° triangle
6" bow compass (pencil)
erasers
dividers
triangular architect's scale
3/4" x 30 yds. drafting tape
#2H drawing pencils
#4H drawing pencils

ADVANCED DRAFTING/ILLUSTRATION

DESCRIPTION

Advanced Drafting/Illustration ... is concerned with the techniques of presenting information graphically including schematics, sections, exploded views, and other techniques which illustrate or clarify verbal or written description.

LEARNING TIME

Hours: 180

OBJECTIVES

Given the appropriate instruction and materials, the student will be able to:

1. Identify the different systems of making three-dimensional drawings and demonstrate skill at freehand technical sketching.
2. Identify methods of making isometric drawings and demonstrate skill at the regular method of making isometric drawings.
3. Demonstrate ability to draw irregular objects including ellipses, spheres, circles, angles, and hexagons.
4. Demonstrate ability to use ellipse template to draw various types of fasteners including hexagon head, square head, round head, fillister head, flat head, carriage head, and Phillips head.
5. Demonstrate ability to draw an accurate plan of an illustration showing easily understood views, proper placement of parts, details, assemblies, spots or sections, and the necessary index numbers, leaders, and callouts to identify the object clearly.
6. Use the perspective grid to draw basic problems.
7. Demonstrate ability to make dimetric and trimetric drawings.
8. Demonstrate ability to do line contrast shading and several methods of surface shading including smudge and paste-up.
9. Describe methods and reasons for photo retouching.
10. Demonstrate ability to make oblique drawings.

Acceptable achievement will be determined by successful accomplishment of laboratory activities and a minimum of 80% success on written tests.

MODULE OUTLINE

A. Freehand Technical Sketching

B. Isometric Drawing

C. Basic Techniques, Intersections, and Sections

D. Fasteners and Springs

E. Layout and Construction Methods

F. Perspective Drawing

G. Dimetric and Trimetric Drawing

H. Shading Techniques and Photo Retouching

I. Oblique Drawing

CURRICULUM MATERIALS

Technical Illustration (text), 2nd edition, T. A. Thomas. McGraw-Hill, Inc., 1221 Avenue of the Americas, New York, NY 10020

Film Loops: McGraw-Hill, Inc.

Heisel: Mechanical Drawing Film Loops

Sketching Straight Lines	07-028001-0
Sketching Circles and Arcs	07-028002-9
T-Square and Triangles, Part 1	07-028003-7
T-Square and Triangles, Part 2	07-028004-5
Lettering	07-028005-3
Drawing Irregular Curves	07-028006-1
Compasses	07-028007-X
Drawing with Templates	07-028008-8
Inking Techniques	07-028009-6
Drafting Machines	07-028010-X
Understanding Orthographic Multiview Projection	07-028011-8
Spacing Views in Orthographic Multiview	07-028012-6
Developing an Orthographic Multiview Drawing	07-028013-4
Auxiliary Projection	07-028014-2
Full Sections and Half Sections	07-028015-0
Revolved Sections and Removed Sections	07-028016-9

Offset and Brokenout Sections	07-028017-7
Surface Development (Parallel Line)	07-028018-5
Surface Development (Radial Line)	07-028019-3
Surface Development (Triangulation)	07-028020-7
Isometric Drawing	07-028021-5
Oblique Drawing	07-028022-3
One-point Perspective Drawing	07-028023-1
Two-point Perspective Drawing	07-028024-X
Set of 24:	07-079943-1
Guidebook	07-028000-2

LABORATORY ACTIVITIES

1. Study blueprints, photographs, and engineering sketches and develop technical illustrations from each
2. Make freehand technical sketches to plan the layouts
3. Prepare accurate illustrations (construction drawings) from areas of career interest
4. Trace finished illustrations
5. Do paste-up work
6. Retouch technical photographs

LABORATORY MATERIALS

18" T-square
12" x 17" drawing board
8" 45° triangle
8" 30°-60° triangle
6" bow compass (pencil)
dividers
triangular architect's scale
3/4" x 30 yds. drafting tape
erasers
#2H drawing pencils
#4H drawing pencils
elipse templates - small angle and large angle
isometric elipse template
hexagonal template
isometric hexagon template
commercial paste-up material
perspective grid

061

INTRODUCTION TO FLUID DUPLICATING

DESCRIPTION

Introduction to Fluid Duplicating ... examines the history of the fluid process, special purpose masters and their applications, and block-out techniques. Paperwork systems are examined in depth using several models, and the myriad applications of the fluid process for business, schools [illegible] are explored.

LEARNING TIME

Hours: 5

OBJECTIVES

Given the appropriate supplies, the student will be able to:

1. Prepare and run at least one master that might be typical in the following categories:
   a. business
   b. associations
   c. schools
   d. churches.
2. Transfer the information on the guide-printed master provided to the preprinted record forms found in the supplies envelope of the A. B. Dick Fluid Series.

Performance will be judged correct if the characters on the duplicated copy have complete form with uniform density, if the colors are vivid and uniform, if placement of the duplicated copy is similar to the model sheet, if the duplicated copy is clean and free of streaks, if all errors have been corrected, and if the exercise is completed in two hours or less.

MODULE OUTLINE

A. Preface

B. Brief History

C. Modern Fluid Duplicating

D. Special Masters and Services

E. Block-out Techniques

F. Systems Work

G. Applications

CURRICULUM MATERIALS

Fluid Applications (text), Fluid Series, A. B. Dick

Teacher's Manual, Fluid Series, A. B. Dick

Films: "Duplicating by the Spirit Method," 14 minutes color, 16mm, BFA Educational Media, 2211 Michigan Avenue, Santa Monica, California 90404

"Mimeographing Techniques," 16 minutes color, 16mm, BFA Educational Media

LABORATORY ACTIVITIES

1. Prepare at least one typical master that might be used in each of the following application categories: business, associations, schools, churches. Use multicolors wherever appropriate.
2. Using the guide-printed master found in the supplies envelope of the A. B. Dick Fluid Series, transfer the information--in part or completely--to the preprinted record forms also supplied.

LABORATORY MATERIALS

Supplies: 2 pkgs. (100) spirit masters
1 ream 20 pound, white 8-1/2 x 11 inch impression paper

Equipment: Duplicating machine and fluid

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DUPLICATOR OPERATION

DESCRIPTION

Duplicator Operation ... develops basic operating techniques and an understanding of the fluid process; it is a generalized unit applicable to all fluid duplicators.

LEARNING TIME

Hours: 5

OBJECTIVES

Given the necessary materials, the student will be able to attach a master to a duplicator and print ten well-positioned, clean copies.

Each student will reach a skill level related to his abilities. The student will reach a semivocational, vocational, or an acquaintanceship level of achievement dependent upon the successful completion of the post test and exercise check list.

MODULE OUTLINE

A. Fluid Duplicator Systems
B. Master Unit
C. Attaching Master
D. Creating the Image
E. Moistening Systems
F. Fluid Supply
G. Guide Rail Adjustment
H. Paper Adjustments
I. Loading Master
J. Copy Adjustments
K. Removal and Handling of Used Master
L. Cleaning Hands and Machine
M. Problem Solving
N. Two-sided Duplicating
O. Summary

CURRICULUM MATERIALS

Duplicator Operation (text), Fluid Series, A. B. Dick

Teacher's Manual, Fluid Series, A. B. Dick

LABORATORY ACTIVITIES

Run 10 copies of an already prepared spirit master. Rate performance using the "Check-It-Yourself Scoreboard."

LABORATORY MATERIALS

Supplies: Prepared spirit masters (from Introduction to Fluid Duplicating unit)

1 ream 20 pound, white 8-1/2 x 11 inch impression paper

Equipment: Duplicating machine and fluid

MASTER IMAGING

DESCRIPTION

Master Imaging ... exposes the student to the full range of imaging techniques: typing, writing, drawing, tracing, shading, and lettering. Also covered are methods of master correction, latent imaging, multiple color, and the Azograph process. The thermal process is covered as it is used to image masters, produce transparencies and reflex masters, and laminate.

LEARNING TIME

Hours: 12

OBJECTIVES

Given a master unit the student will be able to:

1. Image it correctly by typewriting, writing, lettering, drawing, and shading.
2. Develop a latent image.
3. Prepare multicolor copies.
4. Make all necessary corrections.
5. Place master on fluid duplication.
6. Run 10 copies.

Performance will be judged correct if the characters on the duplicated copy have complete form with uniform density, if the colors are vivid and uniform, if placement of the duplicated copy is similar to the model sheet, if the duplicated copy is clean and free of streaks, if all errors have been corrected, and if the exercise is completed in two hours or less.

Given a faxable printed, written, or drawn original, the student will be able to:

1. Image a thermal spirit master and duplicate 10 copies.
2. Make a thermal transparency for overhead projection.
3. Image a thermal master/transparency unit, duplicate 10 copies, project the same master/transparency from an overhead projector, and laminate the original.

Performance will be judged correct if the duplicated copies and transparencies are clean, clear, legible; if the lamination is complete; and if the exercise is completed in one hour or less.

MODULE OUTLINE

A. Spirit Master Unit

B. Azograph Master Unit

C. Preparing Typewriter for Master Unit Typing

D. Typewriter Operation for Master Unit Typing

E. Hand Preparation of Master Unit

F. Latent Image Transfer

G. Colored Carbon Sheets

H. Correction Techniques

I. Correcting Errors on Azograph Masters

J. Imaging Thermal Spirit Masters

K. Laminating an Original

CURRICULUM MATERIALS

Master Imaging (text), Fluid Series, A. B. Dick

Teacher's Manual, Fluid Series, A. B. Dick

LABORATORY ACTIVITIES

1. Prepare spirit master unit
2. Duplicate master
3. Develop latent image on duplicate copy
4. Evaluate performance with "Check-It-Yourself Scoreboard"

LABORATORY MATERIALS

Supplies: 1 pkg. spirit master units, Cleen-Seal, purple

4 pkgs. colored spirit master units, Cleen-Seal, red blue, green, black (1 pkg. each color)

3 type cleaning brushes

10 plastic backing sheets

10 correction blades (or razor blade, or pen knife)

2 doz. correction pencils

1 pkg. thermal masters

3 pkgs. transparencies

24 pkgs. (2 each) laminating sheets

24 spirit carriers

24 thermal carriers

10 correction tapes

1 pkg. pencil carbon paper

5 lettering guides, No. 688

5 lettering styli, No. 472

5 screen plates, No. 1627

5 dual styli, No. 1412

24 ball-point pens

24 pencils

24 latent image transfer sheets

12 special markers for latent imaging

1 ream 20 pound, white spirit impression paper, 8-1/2 x 11 inch

Equipment: Typewriter

Drawing boards with movable ruling edges

Desks with hard, smooth writing surface

Fluid duplicator and fluid

OFFICE ARTWORK PREPARATION

DESCRIPTION

Office Artwork Preparation ... familiarizes the student with the basics of design, layout, art preparation, typography, copy fitting, and color selection as they pertain to the mimeograph process.

LEARNING TIME

Hours: 12

OBJECTIVES

Given the necessary materials, the student will be able to:

1. Identify and describe the 12 basic principles of layout and design as applied to the preparation of artwork for the stencil.
2. Prepare thumbnail sketches, rough drafts, comprehensive layouts, finished layouts.
3. Use special colored inks and pads.
4. Identify type styles and describe their use for headlines, subheadlines, body copy, and copy fitting.
5. Demonstrate knowledge of the psychology of using various colors.

Performance will be judged correct if, after completing the performance exercise on page 49 of the text, the student receives 8 checks on the "Check-It-Yourself Scoreboard" on page 54.

MODULE OUTLINE

A. Rectangular, "L" and Other Design Forms

B. Twelve Basic Principles of Layout and Design

C. Designing and Thumbnail Sketches

D. Designing and Producing a Rough Draft

E. Designing and Producing a Comprehensive Layout

F. Designing and Producing a Finished Layout

G. Hand Lettering Techniques

H. Type Styles

I. Uses of Lettering with Thermal and Electronic Stencils

1. adhesive lettering
2. tab lettering
3. border of ornamental lettering

J. Applications of Color to Stencil Process Work

K. Preparation and Use of Multicolor Ink Pads

CURRICULUM MATERIALS

Artwork Preparation (text), Mimeograph Series, A. B. Dick

Teacher's Manual, Mimeograph Series, A. B. Dick

LABORATORY ACTIVITIES

1. Prepare the following:
   a. thumbnail sketch
   b. rough draft
   c. comprehensive layout
   d. finished layout for a manually prepared stencil
2. Utilizing a rectangular design pattern, incorporate layout and design principles covered
3. Prepare a finished artist stencil from the finished layout
4. Duplicate 50 copies of the artist stencil

LABORATORY MATERIALS

Supplies: 1 ream onion skin (thin tissue) paper

2 pkgs. artist stencils (electronic stencils optional)

5 lettering guides and styles required to match the lettering guides

3 reams 20 pound, white mimeograph paper

Equipment: Illuminated drawing board

Mimeograph machine

STENCIL TYPING

DESCRIPTION

Stencil Typing ... instructs the student in the proper use of a stencil for manual or electric typewriters, correct copy placement and stencil correction.

LEARNING TIME

Hours: 10

OBJECTIVES

Given a stencil the student will be able to:

1. Assemble it correctly.
2. Align it in a manual or electric typewriter prepared for stencil typing.
3. Use the stencil sheet guide markings for copy placement.
4. Type one or more exercises with the proper touch.
5. Make all necessary corrections, and place the typed stencil(s) on the mimeograph machine and run 10 copies.

Performance will be judged correct if the characters on the reproduced copy have complete form with uniform density and with all errors corrected.

MODULE OUTLINE

A. Main Parts of Stencil Assembly

B. Stencilization and the Relationship of the Stencil to the Mimeograph Machine

C. Stencil Sheet Guide Marks

D. Preparing the Typewriter for Stencil Typing

E. Typewriter Operation for Stencil Typing

F. Proper Correction Techniques

CURRICULUM MATERIALS

Stencil Typing (text), Mimeograph Series, A. B. Dick

Teacher's Manual, Mimeograph Series, A. B. Dick

Reference Manual, Mimeograph Series, A. B. Dick

LABORATORY ACTIVITIES

Type sample stencils and have copies mimeographed as described in Performance Exercises 1 - 3 in the text.

LABORATORY MATERIALS

Supplies: 3 pkgs. stencil S960, A. B. Dick

3 pkgs. stencil 1960, A. B. Dick

50 paste ink, 3400, black, A. B. Dick

1 ream 20 pound, plain white mimeograph paper

Equipment: Typewriter

Model 530 Mimeograph, A. B. Dick (or equivalent)

STENCIL IMAGING

DESCRIPTION

Stencil Imaging ... instructs the student on how to trace, shade, letter, rule, and write correctly on a stencil sheet while it is attached to an illuminated drawing board. The making of necessary corrections is also covered.

LEARNING TIME

Hours: 5

OBJECTIVES

Given a stencil and necessary marking tools, the student will be able to:

1. Trace, shade, letter, rule, and write correctly on a stencil sheet while it is attached to an illuminated drawing board.
2. Make all necessary corrections.

Performance will be judged correct if the student can make 5 or more checks in the "Check-It-Yourself Scoreboard" on page 53 of the text after completing Performance Exercise No. 1.

MODULE OUTLINE

A. Illuminated Drawing Board Parts
B. Attaching Stencil
C. Layout or Dummy
D. Attaching Layout
E. Tracing Illustrations on a Stencil
F. Shading a Stencil
G. Lettering a Stencil
H. Ruling a Stencil
I. Writing on a Stencil

CURRICULUM MATERIALS

Stencil Imaging (text), Mimeograph Series, A. B. Dick

Teacher's Manual, Mimeograph Series, A. B. Dick

LABORATORY ACTIVITIES

1. Following the procedure described on page 50 of the text, prepare a stencil using the many techniques covered in this module
2. Mimeograph the stencil
3. Evaluate the results

LABORATORY MATERIALS

Supplies: Materials required for Performance Exercise No. 1

2 doz. soft pencils and onion skin paper (available from Office Artwork Preparation unit)

2 pkgs. stencils and cushion sheets

12 units correction fluid

12 flexible writing plates

2 doz. rolls transparent tape

12 roll-point styli No. 469

8 wire-loop styli No. 405B

8 ball-point styli No. 410XS

5 each lettering guides No. 684, 685, and 1515

5 each lettering styli No. 470 and 472 (or dual stylus No. 1411)

5 shading wheels No. 460

5 screen plates No. 1627

5 screen plate dual styli No. 1412

1 ream 20 pound, 8-1/2 x 11 inch mimeograph paper

Additional materials required for Performance Exercise No. 2

2 pkgs. stencils and cushion sheets

5 each lettering guides No. 725 and 1526

1 ream 20 pound, 8-1/2 x 11 inch mimeograph paper

Equipment: Mimeograph machine

Illuminated drawing board with movable ruling edges

MIMEOGRAPH OPERATION I

DESCRIPTION

Mimeograph Operation I ... is designed to teach the basic essentials of operating a mimeograph machine.

LEARNING TIME

Hours: 2

OBJECTIVES

Given a stencil duplicator, impression paper, and an imaged stencil, the student will be able to:

1. Attach a stencil to a duplicator and print 10 copies.
2. Prepare the machine for stencil attachment and storage.

Performance will be judged correct if the student can make 7 or more checks in the "Check-It-Yourself Scoreboard" on page 35 of the text after completing the performance exercise.

MODULE OUTLINE

A. Adjusting the Paper Feed and Receiving System

B. Attaching the Stencil Assembly

C. Running Copies

CURRICULUM MATERIALS

Mimeograph Operation I (text), Mimeograph Series, A. B. Dick

Teacher's Manual, Mimeograph Series, A. B. Dick

Reference Manual, Mimeograph Series, A. B. Dick

LABORATORY ACTIVITIES

Run 10 good copies of an already prepared stencil

LABORATORY MATERIALS

Supplies: Prepared stencils (from a previous assignment)
1 ream 20 pound, white 8-1/2 x 11 inch mimeo paper

Equipment: Model 530 Mimeograph, A. B. Dick (or equivalent)

MIMEOGRAPH OPERATION II

DESCRIPTION

Mimeograph Operation II ... prepares the student to make all duplicator adjustments necessary to produce top quality images on a variety of paper sizes.

LEARNING TIME

Hours: 8

OBJECTIVE

Given the proper materials, the student will be able to make all duplicator adjustments necessary to produce top quality images on a variety of paper sizes.

Performance will be judged correct if, after completing the performance exercise on page 39 of the text, the student receives 8 or more marks in the "yes" column of independent performance shown on page 40 of the text.

MODULE OUTLINE

A. Paper Feed System
B. Copy Counter
C. Inking System
D. Running Multiple Colors
E. Identifying Poor Copy Problems
F. Identifying Setoff
G. Adjusting Speed
H. Using Ink Pad Blockouts
I. Using Copy Blockouts
J. Storing Stencils

CURRICULUM MATERIALS

Mimeograph Operation II (text), Mimeograph Series, A. B. Dick

Teacher's Manual, Mimeograph Series, A. B. Dick

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LABORATORY ACTIVITIES

1. Prepare a mimeograph for operation
2. Prepare a stencil (copy on page 41 of text)
3. Follow directions listed on page 40 of the text in operating the machine

LABORATORY MATERIALS

Supplies: 3 reams white, 8-1/2 x 11 inch mimeograph paper
48 pieces of blockout paper
previously prepared stencils
24 stencil file folders

Equipment: Model 530 Mimeograph, A. B. Dick (or equivalent)

078

DECISION MAKING

DESCRIPTION

Decision Making ... provides for the development and understanding of decisions needed by students in acquiring sufficient business knowledge for adequate shop administration. The design provides for a series of decisions to be made by students operating a simulated business. Decisions regarding purchasing, estimating, distribution, personnel, and sales provide a model of the inter- and intrarelationships of management activities.

LEARNING TIME

Hours: 20

OBJECTIVES

Given the appropriate instruction and materials and assuming that the student is the manager of a simulated business, the student will be able to:

1. Select the management and policy-making personnel for the business.
2. Develop an organization chart for the business.
3. Identify issues that will have long-range implications for the business.
4. Illustrate a problem for the business by sketching a decision tree.
5. List the responsibilities of the manager of finance for the business.
6. Define the capital worth of the business.
7. Explain the plan for amortizing equipment for the business.
8. Demonstrate the ability to figure operating costs and the realization of a profit for the business.
9. Interpret a "just" labor cost in setting a "fair" price.
10. Identify economic variables that affect the prices charged by the company.
11. Itemize the variety of graphic operations to be performed by the company.

12. Name groups of closely related jobs in the business.
13. Explain benefits that employees are seeking from work.
14. List strengths of employees in the business.
15. Describe how management can be certain an employee understands how to perform a specific task.
16. Prepare upward and downward communications in the business.
17. Define the objectives of the business.
18. Name the human characteristics of a person asked to make management decisions for the business.
19. Classify the production department supervisors for the business.
20. Outline the responsibility and freedom to be given employees in solving production problems.
21. Apply the formula: Price − Cost = Profit.
22. Develop procedural forms for the business.
23. Measure the performance of "plant engineering" processes in the business.
24. Interpret the plant service personnel for the business.
25. Write examples of production jobs to be performed by the company.
26. Classify and cost out the kind and size of printing equipment and materials to be utilized by the company.
27. Display a layout for the graphic communications work center.
28. Build a quality control component for the business which proves its effectiveness by producing graphics that meet the customer's requests.
29. Apply a "critical path" chart for a production job in the business.
30. Measure the effectiveness of planning by using the "decision concept" technique.
31. Outline factors in the business that will affect the quality of the product.
32. Explain the process of value analysis and identify the person who will perform this function in the business.
33. Locate operations in the business where production controls may be established.
34. Describe how the business would perform sales and distribution functions for its customers.

35. Demonstrate how competition or the lack of it will affect the sales and distribution decisions of the business.

36. Explain how the business will communicate with its customers.

Evaluation of achievement will be determined by completion of answers to each of the 36 problems presented in the module. Performance will be acceptable if responses meet the subjective *analysis and approval of the instructor.*

MODULE OUTLINE

A. Introduction--description of model businesses

B. Manager Decisions
   1. directing
   2. planning
   3. staffing
   4. communications
   5. controlling

C. Policy Decisions
   1. managerial levels
   2. responsibilities
   3. tasks/goal setting
   4. decision tree

D. Financial Decisions
   1. capital
   2. pricing
   3. profits
   4. wages
   5. fixed costs
   6. variable costs

E. Personnel Decisions
   1. communication
   2. staffing
   3. wages
   4. working conditions
   5. training

F. Production Decisions

1. decision tree
2. profit equation
3. estimating
4. scheduling
5. routing
6. dispatching
7. expediting
8. plant engineering
9. supplies

G. Quality Control

1. critical path charting
2. decision concept
3. preplanning
4. production controls
5. value analysis

H. Sales and Distribution

1. communicating
2. advertising
3. distribution
4. marketing research

CURRICULUM MATERIALS

Decision Making (text), Graphic Communications Series, A. B. Dick

Teacher's Manual, Graphic Communications Series, A. B. Dick

Huntington Two Simulation Package: MARKET
A computer game engaging two companies in one-product competition. Software Distribution Center, Digital Equipment Corporation, Maynard, MA 01754

LABORATORY ACTIVITIES

1. Role play parts in simulated business
2. Play computer game MARKET (for class with computer accessibility)

LABORATORY MATERIALS

Huntington Two Simulation Package: MARKET

Digital ADP 8/E computer

IMAGE TRANSFER
(LETTERPRESS)

DESCRIPTION

Image Transfer (Letterpress) ... is an enrichment unit dealing with basic printing using pilot or platen presses. Familiarization with type, type setting, justifying, press set up, and operation are achieved by completing a personal project.

LEARNING TIME

Hours: 20 (may be substit[illegible] for part of Offset unit)

OBJECTIVES

Given the appropriate instruction and materials, the student will be able to:

1. Fill in from memory a layout of California Job Case type holder.
2. Demonstrate how to set a paragraph.
3. Demonstrate lock-up using a type form that can be positioned at various places on a sheet of paper.
4. Demonstrate the complete process of make-ready, operation, and clean up of the press.
5. Dry run at least 200 sheets of paper on the press.
6. Lay out, set up, proof, lock up, and print at least 50 copies of a personal card or joke card.
7. Explain multiple justification and list the kinds of jobs in which multiple justification could be used.

Evaluation will be determined by how well the student can identify by name and use the tools and materials he works with as he lays out, sets up, and prints a one-color relief printing job.

MODULE OUTLINE

A. Introduction to Relief (Letterpress) Printing and Basic Printing Information

B. Typesetting and Proofing

C. Lock-up of Jobs

D. Make-ready and Operation of the Platen Press

E. Multiple Justification

F. Enrichment Work in Relief Printing

CURRICULUM MATERIALS

Relief (Letterpress) Printing Unit from Teaching Guide for Graphic Arts 1-2. San Diego City Schools, 1973

Reference Materials:

Carlsen, Darvey E., Graphic Arts. Peoria, Illinois: Charles A. Bennett Co., 1971

Cleeton and Pitkin, General Printing. Bloomington, Illinois: McKnight and McKnight, 1964

Polk, R. W., Elementary Platen Presswork. Peoria, Illinois: Charles A. Bennett Co., 1955

LABORATORY ACTIVITIES

1. Set a paragraph using movable type
2. Prepare a lock-up using a type form that can be positioned at various places on a sheet of paper
3. Go through the complete process of making ready, operating, and cleaning a platen press
4. Lay out, set up, proof, lock up, and print at least 50 copies of a one-color job

LABORATORY MATERIALS

Enough type characters, spaces, and slugs for the job

Composing stick

Chase

Type form

Furniture

Reglets

Quoins

Ink

Press (pilot or platen)

Make-ready sheets

Dusting powder

Gauge pins

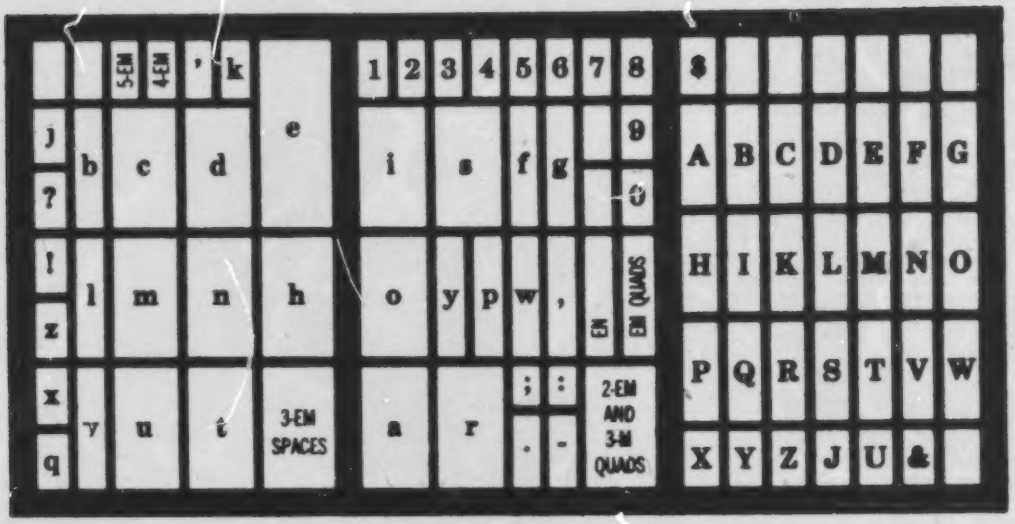
Stock for the job

Pencil to mark alignment

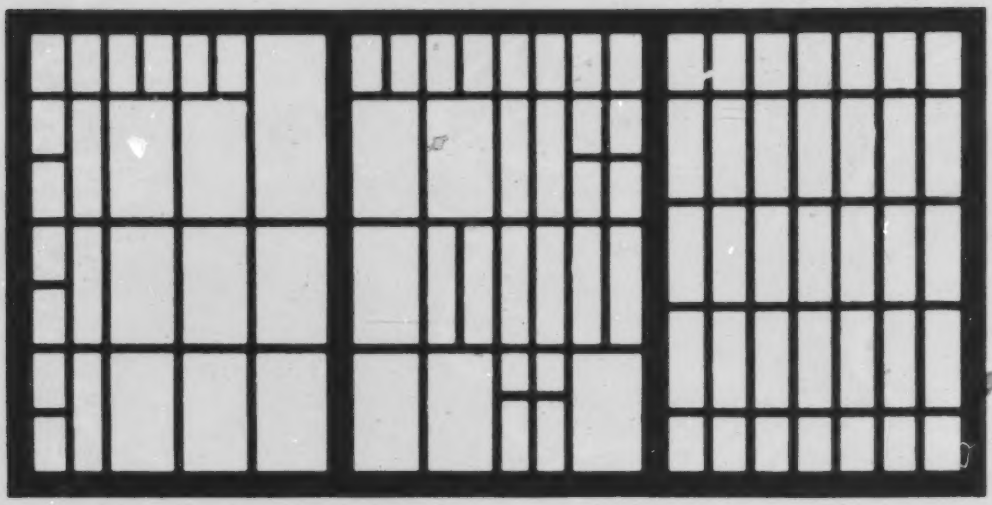
Kerosene, rag, newspapers (for cleaning)

Note: A sample layout of a CALIFORNIA JOB CASE is included on the following page.

layout of CALIFORNIA JOB CASE



layout of CALIFORNIA JOB CASE



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SUGGESTED FACILITIES LAYOUTS

The facilities descriptions and layout sketches following are intended only as guides. Any number of alternative facility plans could work equally well. For some schools, facilities for this program may already exist. In such cases, the following material may offer the instructor and administration some suggestions for making the facility more effective through minor alterations.

For other schools starting up a new program, it may be necessary to remodel existing facilities. In such cases, it should not be expected that the remodeled facilities will offer every advantage that can be achieved with new facilities.

Even if new facilities are to be provided, a school may be unable to support a complete laboratory either because of enrollment, space, staff, or financial limitations. In such cases, decisions must be made regarding minimum program essentials and then facilities designed to fit.

Whether new or remodeled, facilities may serve multiple or joint functions. Thus business and graphics production areas may be combined; art and graphics study areas could be shared; welding can be done in an auto shop; small engine and automotive shops can be combined; computer and business programs may share spaces; the various health and cosmetology programs can share a common suite; the electronics laboratory could be combined with a physical science laboratory.

Such combinations have served elsewhere to strengthen both programs. Students see the direct relationship of what they are doing with careers in another field, and faculty find professional stimulation and mutual support in working with colleagues in what have often been artificially separated disciplines.

GRAPHIC COMMUNICATIONS LABORATORY

The graphic communications laboratory has spaces for and equipment for a variety of types of functions involved in graphics and communication arts. The functions shown include every major unit in the field; however, it may be desirable to offer only limited programs in a given school. Thus a whole functional unit could be deleted and the overall space and equipment needs correspondingly reduced. For example, the movable type unit in printing could be dropped completely or, if a minimal program were desired, everything except fluid duplicating could be deleted in order to simplify the general program as well as the laboratory.

The zones are described below.

Briefing and planning zone. This area is intended to serve as a small lecture area where the class can assemble at the beginning of the class period, be briefed on the operations that they will be doing, instructed as to what the program for the day is to be, to view films, and engage in similar activities. If space is a problem, it can double as a photography studio area.

Letterpress and cold type zone. This unit would normally be found only in a major graphics shop such as the one at the Darmstadt ROC. A small demonstration unit for card printing may be all that is desired at any location. This area includes the composition cabinets which are located adjacent to the briefing and planning zones so that composition and planning can also go on at the student tables. Other equipment includes proof press, the platen press, letter press, portable drying racks, pilot presses, composing table, and lead and slug storage. This space works in conjunction with the paper handling and storage zone that follows.

Paper handling and storage zone. This area includes secure storage and a room which can be locked to serve as an issue room with access only by the instructor. Adjustable shelving should be included in order that bulk paperstock can be stored. Space is provided for a paper cutter, paper drill, and supporting work table. It also includes a folding machine and a work counter for paper handling.

For space reasons, two study carrels are also included in this zone although they could be included in most any other zone as well. Their purpose is to provide a viewing area for single loop instructional films.

Process camera and offset zone. This space includes a variety of functions which team together to provide for the offset process. It includes the process camera and its related darkroom. The camera unit projects into an open space that has light control through a movable drape, in order to provide for consistent lighting during the photographing process. The other end of the camera is included in the darkroom where films can be processed as well.

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A U-shaped composing room is also included which would provide for varitype headliner, typewritten materials, composer and reference materials for type faces, sizing, and similar activities. This area can be secured; however, it might be desirable to fix the equipment to the counters for security reasons. A large light table is provided for general composition which can be used by as few as two students or as many as eight, depending on the size of their respective projects. Two individual light tables are also provided. Since they take more space, one large light table is highly recommended. A general work table is provided which includes the waxer, rubber stamp machine, trim saw, end mitre and press, and general work space. This multipurpose table should have a wood surface and be rugged in composition. Two offset presses are shown. Space should be provided around them for working space; however, one press could be provided if funds or space is a problem.

Book binding zone. This area is quite simple in nature and includes a book binding unit, a stitcher, and a work counter for general operations. In the event this area is eliminated, the stitcher should remain and be placed in the paper handling and storage zone.

Hot type zone. Similar to the letterpress and cold type zone, this unit would normally be found only in a large shop such as the one at the Darmstadt ROC. Much of this function has now been replaced by photo-process operations. This space includes a simple typecaster with type cabinets and it composes a self-contained unit.

Silkscreen zone. This area is simple in nature. If space is a problem, it may be eliminated as an option. It is comprised mainly of a work counter and a large sink with storage below.

SUGGESTED GRAPHIC COMMUNICATION LABORATORY
FUNCTIONAL ZONES

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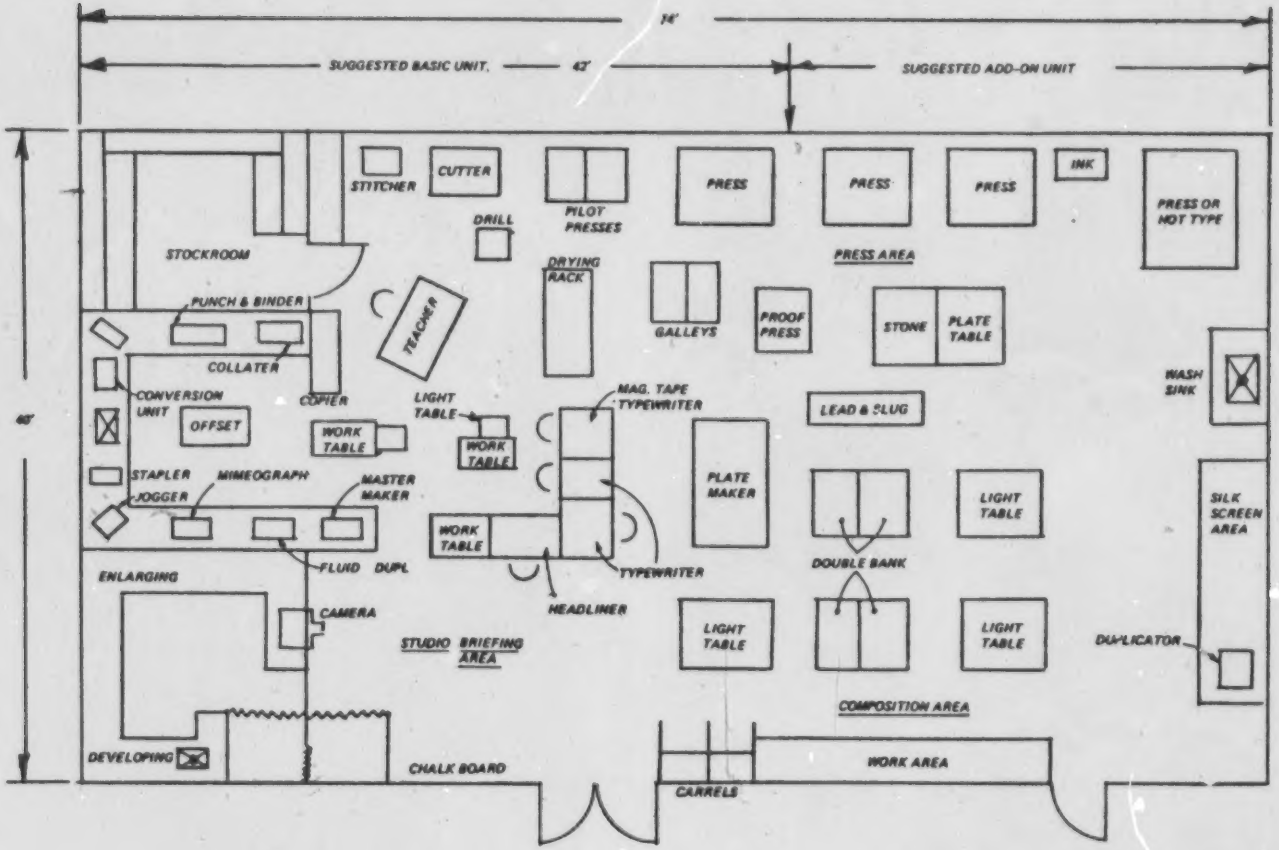
SUGGESTED GRAPHICS COMMUNICATION LABORATORY



SUGGESTED GRAPHICS COMMUNICATION LABORATORY

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Appendix A

ACTIVITY GROUPS AND ROTATION SCHEDULE

To facilitate continuous progress in accomplishing cluster objectives and insure a smooth operating graphics shop, experience has shown that dividing the class into activity groups works well. In the printing branch there would be six beginning groups as follows:

Module 1, Artwork	Group 1
Module 2, Image Assembly	Group 2
Module 3, Photo-conversion	Group 3
Module 4, Image Carrier Preparation	Group 4
Module 5, Image Transfer	Group 5
Module 6, Finishing Procedures	Group 6

Activity Groups

A minimum of two students may form a group. Each group works on the activities of the assigned module for a period of two weeks. Students should be allowed to choose which module they wish to begin studying first. To provide a workable number for each group it may become necessary to make assignments.

Rotation Schedule

The student need not start at the beginning with module 1, Artwork. He may start anywhere he chooses. The important point to remember is that once a module is chosen, the group sequence should be followed. Here are two examples:

Student A chooses module 3 to start with. The rotation order for student A is group 3, 4, 5, 6, 1, 2.

Student B chooses module 6 to start with. The rotation would be group 6, 1, 2, 3, 4, 5.

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Each student in the class is given a copy of the performance objectives for the module he will be working on for the two-week period. After reading each objective and the evaluation for that objective, the student is asked to take the pretest for that module. After completing this test, the student may work on any of the objectives he chooses in any order. Students are encouraged to work together within their group.

Group activity may consist of using filmstrips with sound, slides with sound, Graphic Communications Series Booklets, information sheets, job sheets, reference materials supplied by manufacturers, and operational manuals and books. Jobs are assigned to the student as he shows progress in the module objectives. Because of its complexities, the job may not be completed by the first student but passed along to the next group, and then the next, until it is completed. The student is only asked to work on that part of the process he knows or understands from the modules he has studied.

The student completes as many of the objectives as possible in the two-week period of time. Objectives that are not completed will be finished when the student works on a contract basis at the end of the twelve-week rotation.

Each group chooses one person as a leader from their group to help the next group get started on the objectives. This group leader should be chosen on the basis of his understanding and knowledge of the skills and objectives. Students are encouraged to tutor each other whenever practical.

Group Leaders

Group leaders will meet with the instructor on the last school day of the two-week module period. At this time the instructor will review the objectives covered and answer any questions the group leader may have. The instructor at this time may present new information or review anything covered in the past that will help the

leaders. Note: A student may be a group leader as many times as he is chosen by his group. It is most desirable to have as many students as possible become group leaders.

On the first day of class, after the rotation of groups, the group leader will meet with the new group to help get them started. After they have begun work and he is not needed at the moment, he may go to his new group and work. If a problem or question should come up, the leader will return to the group and give the necessary assistance. While the leaders are doing this, the instructor is able to assist students who have special needs or who need additional help. After three days, the group leader should be free to stay with his new group and not return to help the group he had been assisting.

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GLOSSARY OF TERMS

Module:	A classification of information to be studied at a given time
Module Objectives:	Statements that tell the student what must be done and how it may be accomplished
Group Leader:	A student chosen from a module group to act as an instructor aide in getting a new group started on the same subject the aide has just completed
Activity Group:	Two or more students who have chosen to work in any one of the six module groups
Rotating Groups:	Include Artwork, Image Assembly, Photo-conversion, Image Carrier Preparation, Image Transfer, Finishing Procedures
Rotation Schedule:	Establishes the pattern or cycle of changing from one group to the next group every two weeks

Appendix B

STUDENT CONTRACTS

Employment Directed Activities

Class assignments must relate to job skills. The student performance objectives were written after meeting with in-plant supervisors, quick copy center owners, and industrial representatives. The skills are acquired by the student completing the specified performance objectives, assigned class projects, and job requests from the school or community. Most of the performance objectives are completed by students working on job requests. This has proven to be the most effective way of completing the objectives because the student will see his finished work used in the school or community.

Student Contracts

After the twelve-week group rotation schedule, each student is required to enter into a contractual situation for the purpose of completing 80% of all the objectives of the rotating modules.

Guidelines for Making a Contract

The guidelines for making a contract are as follows:

1. The student should select an assignment from the job requests available; locate a job from outside the class; or work on one of the required class assignments.
2. A job request must be completed with one contract. Two or more students may work on the same contract. This allows each student to work on only that part of the job he feels he wants to complete or feels capable of completing.
3. There are two main parts to the contract--

   1) Who is going to do what--(the student will complete the objectives stated on the contract).

2) Who did what--(evaluation, how many of the contract objectives did the student complete at the end of the contract time).

4. The student may contract to complete objectives without completing a specific job assignment.

5. Contracts should be signed by the student and approved by the instructor before work may begin.

A sample student job contract is on the next page. This format may be altered in any way that would best fit the individual teaching situation.

STUDENT CONTRACT for GRAPHICS COMMUNICATIONS LAB.

Name of Contractor(s)	Section

Day / Mo. / Yr

Date started: ___ ___ ___

Date to be completed: ___ ___ ___

Date completed: ___ ___ ___

(check) WORK ORDER (HCR) ATTACHED ( )
to be filled out before and during job--

OBJECTIVES TO BE COMPLETED BY COMPLETION OF JOB:

Name	Unit: Objective Number(s)

OBJECTIVES COMPLETED AT THE END OF JOB:

Name	Unit: Objective Number(s)

Areas assisted in and by whom:

Signature of contractor(s) Date Instructor's Signature Date

Appendix C

PREPARATION AND PRINTING LABORATORY MATERIALS
(Based on a Class Unit of 24 Students)

Note: This list covers supplies needed for the various modules comprising the basic printing program--Artwork, Image Assembly, Finishing Procedures, Image Carrier Preparation, and Image Transfer (Offset).

Masters and Plates

Direct Image Paper Masters

360	-2-3000 Series -	10-3/4 x 18-1/2	2 packages
	-2-4000 Series -	10-3/4 x 18-1/2	3 packages
	-2-5000 Series -	8-9/16 x 12	3 packages
10 x 15	-2-5000 Series -	10 x 15	3 packages
	-6-6000 Series -	10 x 15	2 packages

Presensitized Aluminum Offset Plates

	385	- 7000 Series -	19-1/4 x 22-7/8	5 boxes
2)	360	- 7000 Series -	10-3/4 x 18-5/8	5 boxes
3)		- 8000 Series -	10-3/4 x 18-5/8	10 boxes
4)	10 x 15	- 7000 Series -	10 x 15	2 boxes
		- 8000 Series -	10 x 15	5 boxes

Photomat Masters

1)	385	-7778-3 Series -	15"	5 rolls
2)	360	-7700-3 Series -	11"	6 rolls
3)	10 x 15	-7700-3 Series -	10"	8 rolls
4)	15"	-Reloadable Cartridge		1 each

Imaging Material

Ribbons (Fabric or Carbon)		3 dozen
Reproducing Pencil	-4-3200	3 dozen
Non-reproducing Pencil	-4-3210	3 dozen
Reproducing Pen	-4-3235	4 dozen
Wedge Eraser	-4-3450	5 dozen
Eraser with Brush	-4-3442	4 dozen
Drawing Fluid	-4-3310	2 dozen

Inks and Modifiers

Inks

1)	Special Black	-3-1012C	36 cartridges
2)	Fast Drying Black	-3-4020C	36 cartridges
3)	Colored Inks--Assorted		24 cartridges
4)	Process Ink--Yellow, Magenta, Blue		10 pounds

Modifiers

1)	Paste Drier	-3-9020	3 pounds
2)	Liquid Drier	-3-9010	3 pounds
3)	Varnish	-3-8010	3 pounds
4)	Ink Dispensing Gun	-4-4972	8 each

Master and Plate Operating Supplies

Solutions

1)	Bichromate Base	-4-1145	5 gallons
2)	Etch	-4-1015	5 gallons
3)	Fountain Concentrate	-4-1115	10 gallons
4)	Gum	-4-1315	5 gallons
5)	Photomat Activator Concentrate	-4-8015	20 gallons
6)	Photomat Stop Bath	-4-8025	20 - ½ gallons
7)	Iso-propyl Alcohol		10 gallons

Plate Preparation Supplies

1)	Desensitizer	-4-8013	14 quarts
2)	Lacquer	-4-4914	14 pints
3)	Masking Paper 10 x 16	-4-4926	5 packages
4)	Masking Paper 11-1/6 x 19-1/4	-4-4927	5 packages
5)	Masking Paper 19-1/4 x 22-7/8	-4-4928	4 packages
6)	Opaque	-4-4910	15 each
7)	Opaque Brushes		15 each
8)	Presensitized Plate Cleaner	-4-8014	8 quarts
9)	Scratch Corrector	-4-4912	12 bottles

Plate Preparation Supplies (continued)

10)	Sponges	-4-4919	3 dozen
11)	Cotton Pads	-4-4913	10 cartons
12)	Cotton Pad Dispenser	-4-4932	4 each

Machine Operating and Cleaning Supplies

Clean-Up Materials

1)	Blanket Wash 5 Gallon Cans	-4-4317	10 each
2)	Blanket Wash Pump	-4-4305	1 each
3)	Blanket Wash Dispensing Can	-4-4300	6 each
4)	Clean-Up Mats	-4-4960B	12 packages
5)	Clean-Up Mats	-4-4962B	12 packages
6)	Chrome Cylinder Cleaner	-4-4965	15 pints
7)	Glaze Remover	-4-4968	8 pints
8)	Desensitizer	-4-4970	8 pints
9)	Ink Roller Conditioner	-4-4976	8 each
10)	Hand Cleaner (1/2 gallon)	-4-4925	5 each
11)	Hand Cleaner Dispenser	-4-4935	3 each

Machine Operating

1)	Blankets--10 x 15	-4-4112	12 each
2)	Blankets--360	-4-4117	12 each
3)	Blankets--385	-4-4122	12 each
4)	Blanket Powder	-4-4905	8 each
*5)	Molleton Covers	-4-4021	24 each
*6)	Molleton Covers	-4-4022	24 each

*If applicable.

Paper Supplies

For All Models of Offset (one case per student)

1)	Red Label (Sub. 20) - White - 8-1/2 x 11 (10 reams per case)	24 cases
*2)	Red Label (Sub. 20) - White - 11 x 17 (5 reams per case)	24 cases
*3)	Red Label (Sub. 20) - White - 17 x 22 (6 reams per case)	24 cases

For Advertising, Sales Promotion, or Halftone Work

1)	Blue Label - Basic Wt. 70 - White 8-1/2 x 11 (10 reams per case)	1 case
*2)	Blue Label - Basic Wt. 70 - White 11 x 17 (5 reams per case)	1 case
*3)	Blue Label - Basic Wt. 70 - Blue 11 x 17 (5 reams per case)	1 case
*4)	Blue Label - Basic Wt. 70 - Pink 11 x 17 (5 reams per case)	1 case
*5)	Blue Label - Basic Wt. 70 - Green 11 x 17 (5 reams per case)	1 case
*6)	Blue Label - Basic Wt. 70 - Canary 11 x 17 (5 reams per case)	1 case
*7)	Blue Label - Basic Wt. 70 - Ivory 11 x 17 (5 reams per case)	1 case
*8)	Blue Label - Basic Wt. 70 - Gray 11 x 17 (5 reams per case)	1 case

Heavy Weight Cardstock or Postcard Work

1)	Index - Basic Wt. 110 - Buff 25-1/2 x 30-1/2	1 case

The above listed materials are available from A. B. Dick Company, 5700 West Touhy Avenue, Chicago, Illinois 60648.

*All the above are multiples of 8-1/2 x 11 and can be cut to smaller sizes to meet specific needs as well as give additional practice.

Finishing Supplies

Staples No. 298302 SF-15	Box 5M

Series 50 Staples for Multinak Stitchers

50/6 - 1/4"	Box 1M
50/8 - 5/16"	Box 1M
50/10 - 3/8"	Box 1M
50/20 - 3/4"	Box 1M
50/23 - 7/8"	Box 1M
50/26 - 1"	Box 1M
50/12 - 1/2"	Box 1M
50/15 - 9/16"	Box 1M
50/18 - 11/16"	Box 1M
50/30 - 1 3/16"	Box 1M

Equipment List for Graphic Communications for One Class of 24 Students

Office Reproduction

204 Thermal Master Maker	1 each
217G Electric Fluid Duplicator	1 each
503 Cabinets	2 each
204 Thermal Stencil Maker	1 each
588 Electronic Stencil	1 each
530 Electric Mimeograph	1 each
Model 5 Mimeoscopes	2 each
1051 Stencil File Cabinet	1 each
503 Cabinets	2 each
508 Cabinet	1 each

Finishing Equipment

7312 Collator	1 each
58 Folder	1 each
665 Lectra Jogger	1 each
14" Triumph Electric Cutter	1 each
Stand for 14" Cutter	1 each
Padding Press 18" x 24"	1 each
Electric Saddle Stapler No. 298273 No. 15 E-4	1 each

Finishing Equipment (continued)

Flat Stapling Attachment No. 298284	1 each
Steel Work Bench No. 298295	1 each
7201 Velo Binder	1 each
MC305 Power Cutter (with Auto. Clamping)	1 each
Challenge Paper Drill RKH	1 each
Single Head Stitcher - Foot Power Model B-1F	1 each
Large Folder	1 each

Preprinting Equipment

Nu Arc SST 20245B Process Camera	1 each
Nu Arc FT 26-1 Plateburner	1 each
Nu Arc VLT 23f Light Table	1 each
Nu Arc LUT 26 Line-up Table	1 each
Nu Arc FDSV24x Darkroom Sink	1 each
Nu Arc W040 Stripping Tables	2 each
Nu Arc PS36 Plate Developing Sink	1 each
Nu Arc DLB1012 Darkroom Lights	2 each
B/G No. 29 Offset Stripping Kit (Stock No. 393289) includes:	1 each

- 12 - assorted stencil knives
- 1 - paste-up kit (pin vise, 6 blades, tweezers)
- 12 - pick-up tweezers
- 12 - No. 1 stripping knives
- 3 - pints paper cement
- 12 - assorted opaquing brushes (pointed & flat)
- 12 - half tone magnifiers
- 12 - opaque buttons
- 3 - 9 oz. jars opaque
- 1 - box (100) razor blades
- 1 - box screen tints (20 x 24, 120 lone, 50%)
- 6 - rolls ruby litho tape, 3/8" wide
- 6 - rolls transparent tape, 3/8" wide

Nu Arc Composer	1 each

Printing

360CD Press with 1-3508 Work Organizer 1-3508 Blanket Washer 1-3586 Dolly 1-3575 Micro Lateral Adjustment	1 each
1-3650 Second Color Head for 360CD	1 each
367A Automated Offset Press with 1-3609 Cyclamatic Blanket Washer	1 each
720 100 Bin Sorter for 367A with 1-3725 Copy Sorter Modification Kit 1-3712 Feed Interrupter Kit	1 each
143 Photomat Platemaker	1 each
385 - 17 x 22 Offset Press with 1-3982 Light 1-3501 Work Organizer	1 each
360 Press with 1-3501 Work Organizer 1-3508 Blanket Washer 1-3586 Dolly 1-3575 Micro-Lateral Adjustment	1 each
675M Master Maker with 1-3777 Jet Toner Kit	1 each
167 Conversion Unit for 675M with 1-3723 Transport Unit	1 each
91-6850 Cabinet for 675M	1 each
1-3393 Cabinet for 167	1 each

NOTE: Listed in order of preference, if not able to order all four presses.

Image Transfer, Letterpress (optional)

Use existing equipment for this module. Due to a decline in the occupational opportunities in this particular area, it is recommended that purchase of additional equipment be avoided. For purposes of general exposure to letterpress, it is suggested that donated equipment can be used.

Table Top Offset Module

This equipment is appropriate for a small shop or advanced reprographics only.

675M Electrostatic Master Maker with 1-3777 Jet Toner Kit	1 each
166 Conversion Unit	1 each
326 Table Top Offset Duplicator with 1-3208 Automatic Blanket Washer 1-3281 Work Organizer 1-3982 Work Light	1 each
111 Metal Plate Maker	1 each
106 Exposure Unit	1 each
508 Cabinet	1 each
503 Cabinets	2 each
91-6850 Cabinet	1 each
IBM Selectric Typewriter	1 each

Appendix D

PHOTO-CONVERSION SUPPLIES
(Based on a Class Unit of 24 Students)

Film

Kodalith Ortho Type 3 Film 2556 SP395 10" x 200'	1 roll
Kodalith Ortho Type 3 Film 2556 SP395 14" x 200'	1 roll
Kodalith Translucent Material 10 x 12	2 pkgs. - 50 sheets per pkg.
Professional Copy Film 4125 10 x 12	1 pkg. - 50 "
Kodalith High Speed Duplicating Film 10 x 12	2 pkgs. - 50 "
Kodak Plus X Pan 4 x 5	2 pkgs. - 25 "
Kodak Tri-X Pan 4 x 5	2 pkgs. - 25 "
Ilford FP4 4 x 5	1 pkg. - 25 "
Kodalith Auto Screen 4 x 5	2 pkgs. - 25 "

Paper

Kodaline Paper 8 x 10	1 pkg. - 100 sheets per pkg.
Kodaline Paper 11 x 14	1 pkg. - 100 "
*Agfa Brovira 111 #1	1 pkg. - 100 "
Agfa Brovira 111 #2	1 pkg. - 100 "
Agfa Brovira 111 #3	1 pkg. - 100 "
Agfa Brovira 111 #4	1 pkg. - 100 "
Agfa Brovira 111 #5	1 pkg. - 100 "
Agfa Brovira 111 #6	1 pkg. - 100 "

*All Agfa Brovira are 8 x 10

Kodak Polycontrast F SP 87 40" x 30'	1 roll
Kodak PMT Negative 10 x 12	4 pkgs. - 100 "
Kodak PMT Positive Receiver 10 x 12	3 pkgs. - 100 "
Kodak PMT Transparent Receiver 10 x 12	1 pkg. - 100 "

Polaroid Materials

Polaroid Type 51 4 x 5	4 boxes - 20 per box
Polaroid Type 57 4 x 5	4 boxes - 20 "
Polaroid Type 55PN 4 x 5	4 boxes - 20 "

Developers

Kodalith Liquid Developer Part A	2 5-gallon cubitainers
Kodalith Liquid Developer Part B	2 5-gallon "
Kodak Rapid Liquid Fixer Part A & B	2 5-gallon "
Kodak Indicator Stop Bath	2 1-gallon size
Kodak Glacial Acedic Acid	1 1-gallon size
Kodak Hypo Clearing Agent	1 5-gallon cubitainer
Kodalith Fine Line Developer	12 2-gallon size
Kodak Supermatic 55 Developer	1 5-gallon cubitainer
Kodak D76 Developer	12 1-gallon size
Kodak DK50 Developer	4 1-gallon size
Kodak Dektol	24 1-gallon size
Kodak PMT Activator	1 5-gallon cubitainer
Crone C Additive	24 4-oz. size

Contact Screens

Kodak Gray Contact Screen 133 Line 14 x 17	1 each
Kodak Gray Contact Screen 133 Line 8 x 10	"
Kodak Pre-Angled Gray Contact Screen 133 Line 45° 11 x 14	"
Kodak Pre-Angled Gray Contact Screen 133 Line 75° 11 x 14	"
Kodak Pre-Angled Gray Contact Screen 133 Line 90° 11 x 14	"
Kodak Pre-Angled Gray Contact Screen 133 Line 105° 11 x 14	"
Kodak PMT Screen 100 Line 11 x 14	"

Filters

Gelatin #96 ND Filters .10-4.0 (all grades)	1 each
Gelatin #58 Filter 3" Square	"
Gelatin #15 Filter 3" Square	"
Gelatin #47B Filter 3" Square	"
Gelatin #29 Filter 3" Square	"
Gelatin #12 Filter	"
Gelatin #61 Filter 3" Square	"
Gelatin #9 Filter 3" Square	"
Gelatin #25 Filter 3" Square	"
Gelatin #23A Filter 3" Square	"
Gelatin #8 Filter 3" Square	"
Kodak Polycontrast Filter Kit	"
Gelatin 2B Filter 3" Square	"
K & M Filter Cabinet 3"	"
Kodak Gelatin Filter Frames 3" Square	"

Miscellaneous

Kodak 4 x 5 Floating Lids	4
Kodak 4 x 5 Film Hangers	12
Kodak Rubber Squeegee	2
Kodak Professional Focusing Cloth	1
Kodak Tray Syphon	1
Kodak Color Separation Guides	6
Kodak Calibrated Step Tablet #2	3
Agfa #72 Photo Type Setting Paper 35M x 100'	6
Kodak Graphic Arts Exposure Computer	24
Kodak Projection Print Scale	2
Kodak Master Darkroom Guide	1
Kodak Contact Control Guide C-1	2
Kodak Filter Selector	1
Kodak Halftone Negative Computer	6

Appendix E

COLOR SEPARATION LABORATORY MATERIALS
(Based on a class unit of 24 students)

Materials and equipment required for use with the Color Separation Curriculum Guide are listed below. Estimates have also been made and listed here of the amounts of film and chemicals to be used by class units of 24 students enrolled in units 1 to 7 of this guide. Actual usage will vary with many conditions including your own instructional emphases. Therefore, please use these recommendations only as a general guide for getting started in color separation work.

Film (8 x 10 is preferred size)

	Sheets per Package	Requirements for 24 Students
KODAK Pan Masking Film 4570 (ESTAR Thick Base)	50	240 sheets
KODALITH Ortho Film 6556, Type 3	50	240 sheets
KODALITH Pan Film 2568 (ESTAR Base)	50	240 sheets
KODAK Separation Negative Film 4131, Type 1 (ESTAR Thick Base)--with unit 7 only	50	240 sheets
KODALITH Ortho Film 2556, Type 3 (ESTAR Thick Base)--with unit 7 only	50	240 sheets
KODALITH Contact Film 4571 (ESTAR Thick Base)--with unit 7 only	50	240 sheets
KODAK High Speed Duplicating Film 4575 (ESTAR Thick Base)--for duplicate sets of screened positives if desired--with unit 7 only		

Chemicals

KODAK Developer DK-50. . . . . Order enough to make 2 gallons of working solution per 1 student

KODALITH Super Developer . . . . Order enough to make 6 gallons of working solution per 1 student

KODAK Indicator Stop Bath. . . . Order 2-1/2 gallons of concentrate for each group of 24 students

KODAK Rapid Fixer. . . . . Order 45 gallons of concentrate for each group of 24 students

Filters

KODAK WRATTEN Filter, No. 23A (Red) 3"

KODAK WRATTEN Filter, No. 58 (Green) 3"

KODAK Filter, No. 47B (Blue) 3"

KODAK WRATTEN Neutral Density Filter, No. 96 (1.0 Density) 3"

KODAK WRATTEN Neutral Density Filter, No. 96 (3.5 Density) "

KODAK WRATTEN Neutral Density Filter, No. 96 (.60 Density) "

KODAK WRATTEN Neutral Density Filter, No. 96 (.30 Density) "

KODAK Color Compensating Filter, No. CC50Y 5"

KODAK Color Compensating Filter, No. CC40Y "

KODAK Color Compensating Filter, No. CC30Y "

KODAK Color Compensating Filter, No. CC20Y "

KODAK Color Compensating Filter, No. CC10Y "

KODAK Color Compensating Filter, No. CC10M "

KODAK Color Compensating Filter, No. CC20M "

(All CC filters are only used in unit 7)

Screens

1 Set KODAK Pre-Angled Gray Contact Screens (Negative), 150 lines per square inch, OR

1 Large Uncut KODAK Gray Contact Screen (Negative), 150 lines per square inch

1 Set KODAK Pre-Angled Magenta Contact Screen (Positive), 150 lines per square inch, OR

1 Large, Uncut KODAK Magenta Contact Screen (Positive), 150 lines per square inch

Equipment

Densitometer (for most effective, quick readings, an electronic is preferred but not absolutely necessary)

Process Camera (set for same-size reproduction)

KODAK Adjustable Safelight Lamp or equivalent

KODAK Register Printing Frame

KODAK Register Punch

Contact Printing Lamp (made by modifying KODAK Adjustable Safelight Lamp, see Kodak Pamphlet No. K4)

KODAK Tray Syphon

KODAK Process Thermometer

KODAK Timer

Tools

KODAK Safelight Filter 00 (light yellow) 5-1/2 inch diameter

KODAK Photo Chamois

12" KODAK Master Print Roller

KODAK Rubber Squeegee (10 inch)

KODAK FLEXO Film Clips

Camel's-Hair Brush

Air hose

Transparent Pressure-Sensitive Tape

Scissors

Knife

Steel Ruler

Light-Blue Pencils

Paper Cutter

Magnifiers (10 power)

Materials

1 Continuous-Tone Photograph

1 Continuous-Tone Color Transparency (properly exposed with normal color balance)

1 Color Bar Chart prepared by the Graphic Arts Technical Foundation

Materials (continued)

Gray Balance Chart prepared by the Graphic Arts Technical Foundation (Address: Graphic Arts Technical Foundation, 4615 Forbes Avenue, Pittsburgh, Pennsylvania 15213)

Kodak Reflection Density Guide (24-step), Kodak Publication No. Q-16

Kodak Three-Point Transparency Guide, Kodak Publication No. Q-6C (packaged with this guide)

KODAK Photographic Step Tablet, No. 2

Basic Color for the Graphic Arts, Kodak Publication No. Q-7

Student Workbook "Color Separation," Kodak Publication No. ED-10-10S1

Exposure Guides

Kodak Direct-Screen Color-Separation Dial, Kodak Publication No. Q-10A (packaged with this guide)

Kodak Graphic Arts Exposure Computer, Kodak Publication No. Q-12

Kodak Halftone Negative Computer, Kodak Publication No. Q-15 (optional)

Super-size teaching aid kit available for teaching use of KODAK Graphic Arts Exposure Computer (Q-12), Q-12SS

Note: All publications are available directly from Eastman Kodak Company, Department 454, Rochester, New York 14650

Proofing Material

(Your choice)